

EXHIBIT 9
[FILED UNDER SEAL]

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UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS

STATE OF TEXAS et al.,
Plaintiffs

vs.

GOOGLE LLC,
Defendant

Case Number 4:20-cv-00957

EXPERT REPORT OF JEFFREY S. ANDRIEN

JUNE 7, 2024

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[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] 75

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I. INTRODUCTION

A. Qualifications

1. I am the Senior Managing Director in charge of Coherent Economics' ("Coherent") Austin, Texas office. Coherent is a privately held economic consulting firm with offices in Illinois and Texas. Coherent provides litigation support, expert witness, valuation, and other consulting services to clients throughout the country. Prior to working at Coherent, I held managerial positions at other nationally recognized consultancies.

2. My experience as a business advisor and consultant has included the study of numerous economic and financial issues related to litigation disputes, including damages quantifications and/or liability assessments for matters involving fraud, breach of contract, bankruptcy, securities, intellectual property, antitrust, deceptive practices, and consumer protection, among others. I have been retained by state and local governments, federal government agencies, individuals, and private companies on civil and criminal cases. My studies have been performed across a wide array of industries, including the high tech, real estate, retail, food and beverage, aviation, medical device, energy, and pharmaceutical industries. I have authored several expert reports and have testified in deposition and at trial in state and federal courts across the country. Additionally, I have been recognized by industry press as one of the top economic experts in the United States.-

3. In addition to my responsibilities as a consultant, I work as a lecturer in the Finance Department at The University of Texas' McCombs School of Business ("McCombs"), where I teach a core MBA-level corporate finance class, as well as a graduate-level applied finance course. I have also taught finance, marketing, and economics classes at other universities, both domestically and abroad, including at Washington University's Olin School of Business in St.

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Louis, Missouri and Thammasat University in Southeast Asia. Additionally, I routinely make presentations on commercial damages, finance and valuation, and intellectual property issues to law firms, professional societies, and scholastic institutions.

4. I hold a B.A. in Economics and an M.B.A. from the University of Texas at Austin. A copy of my curriculum vita and testimony experience for at least the past ten years is attached to this report as **Appendix 1**.

B. Compensation Disclosure

5. Coherent is compensated at the rate of \$620 per hour for my time on this matter. Research and analysis for this report was also performed by consultants at Stout, a global advisory firm, and Coherent under my supervision, direction, and instruction. Hourly rates for these consultants range from \$290 to \$600 per hour. My compensation and that of Coherent and Stout is not determined by the outcome of this case.

C. Documents Considered

6. In conducting my analysis, I, and/or others working under my guidance, direction, and supervision have reviewed certain documents, data and other information produced by the parties to this litigation, as well as publicly available information. I have been provided access to the document database as well as all depositions related to this litigation. The information I have considered and/or relied upon to date in forming my opinions is listed in **Appendix 2** of this report.

D. Allegations and Summary of Assignment

7. I have been retained by the Lanier Law Firm PC, counsel for certain states on behalf of all states that are plaintiffs in this matter (collectively, the “Plaintiff States”)¹ to serve as an

¹ See Fourth Amended Complaint in *State of Texas et al. vs. Google LLC*, In Re: Google Digital Advertising Antitrust Litigation, Civil Action No. 1:21-cv-06841-PKC, May 5, 2023 (“Complaint”). The plaintiffs in this lawsuit are States of Alaska, Arkansas, Florida, Idaho, Indiana, Louisiana, Mississippi, Missouri, Montana, Nevada, North Dakota, South Carolina, South Dakota, Texas, and Utah, and the Commonwealths of Kentucky and Puerto Rico, .

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expert witness in the above-referenced matter. I understand that the Plaintiff States allege that Google, LLC (“Google”), formerly known as Google, Inc. and a subsidiary of the holding company, Alphabet, Inc.,² engaged in unfair, false, deceptive, and misleading business acts and practices related to its display advertising technology and changes it made to its ad buying tools and to auctions conducted on its AdX advertising exchange during at least the period 2013 to the present.³ Furthermore, I understand that the Plaintiff States are seeking civil penalties under each State’s deceptive trade practices statutes.⁴ I have been asked to analyze certain factors that I understand are relevant to determining the applicable statutory penalties in this matter. In particular, I address the amount necessary to deter future misconduct, the history of past violations, and the ability of the offending party to pay a penalty, though as discussed below, there are additional factors that a trier of fact may consider in assessing an appropriate penalty amount.

8. My analysis, evaluation, and opinions (“study”) discussed in this report are based on certain assumptions, including the assumption that Google is found liable for the alleged misconduct. No opinions on liability are expressed herein.

9. My study is further based upon my skills, knowledge, experience, education, and training, as well as publicly available information, deposition testimony, certain reports prepared by other experts in this matter, and the currently available documents, information, and materials produced in connection with this litigation, to which I was provided full access. I am in a position to render my opinions at this time based upon such information and my qualifications. I

² Google Inc. created the parent company Alphabet Inc. in August 2015. *See* “Google Creates Parent Company Called Alphabet in Restructuring,” Wall Street Journal, August 10, 2015. Two years later, in September 2017, the Google Inc. subsidiary was converted to Google, LLC. *See* Alphabet 10-K for the fiscal year ended December 31, 2017. When referring to Google’s financial performance, I use the term “Google” to refer to both Google and Alphabet, Inc. throughout this report.

³ *See* Complaint at ¶¶298, 552 discussing the launch of Project Bernanke.

⁴ The Plaintiff States have also brought antitrust claims against Google in this matter; however, my opinions are limited to those claims related to deceptive trade practices.

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respectfully reserve the right to revise or expand my opinions to reflect any additional opinions I may formulate based upon newly acquired information that may become available to me up to and during the time of trial, including but not limited to Google or any third-parties making additional witnesses available for depositions, further production of documents or other materials by Google or any third-parties, and any further responses, supplements, or amendments to any discovery responses. I also reserve the right to respond to opinions of expert witnesses engaged by Google.

10. In connection with my anticipated trial testimony in this action, I may use as exhibits various documents produced in this litigation, which refer to or relate to the matters discussed in this report. In addition, I may create or assist in the creation of demonstrative exhibits to assist me in my testimony.

II. SUMMARY OF OPINIONS

11. Based on my analysis of documents and information I have reviewed in this case, and my education, training, and experience, I hold the following opinions:

- a. Google's financial performance during the period 2013 to present has been extraordinary.⁵
 - i. From 2013 to 2023, Google's gross revenue totaled \$1.73 trillion, and its operating income totaled \$441.98 billion. Google's revenue grew by a compound annual growth rate ("CAGR") of 18.7% from 2013 to 2023. To put this into perspective, the revenue of the average S&P 500 company experienced a 5.0% CAGR over the same period. Google's operating profit

⁵ Throughout this report, I use information currently available to me, including annual income statement data through December 31, 2023, to make comparisons across years and calculate growth rates. I also report Google's Q1 2024 revenues and earnings based on its latest available quarterly filing. Finally, I report balance sheet data as of March 31, 2024, based on Google's latest available quarterly filings. I reserve the right to update my analyses based on updated financial and other information made available by Google, as well as publicly available information, up to and during the time of trial.

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has grown by a CAGR of 18.5% from 2013 to 2023. The operating profit of the average S&P 500 company experienced a 5.6% CAGR over the same period.

- ii. As of March 31, 2024, Google held cash, cash equivalents, and marketable securities totaling \$108.09 billion.
 - iii. Google is the fourth largest publicly traded company in the world by market capitalization, with a market capitalization of \$2.15 trillion as of June 3, 2024.
- b. Google's growth and profitability have been driven by advertising. Google's advertising operating profit for 7 of the reported 11 years 2013 to 2023 exceeded its overall operating profit.

- c. [REDACTED]
- [REDACTED]
- [REDACTED]. [REDACTED]
- [REDACTED]
- [REDACTED]

- d. The relevant metric to count violations is all AdX Open Auctions during the time that the misconduct occurred. I have determined that:

- i. From 3/31/2015 to 9/25/2019 [REDACTED]
- ii. From 8/20/2015 to 7/17/2018 [REDACTED]

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- iii. From 11/11/2013 to present [REDACTED]
[REDACTED]
- iv. From 11/20/2019 to present [REDACTED]
[REDACTED]
- e. Applying each Plaintiff State's maximum allowable statutory penalty to estimated violations in each state results in a penalty of [REDACTED]
- f. To deter Google from continuing its misconduct, the penalty must eliminate Google's financial incentive to engage in the misconduct. At minimum, this would involve penalizing Google for the total incremental benefits (including future benefits) from the alleged misconduct.
 - i. The alleged misconduct provides Google with direct and indirect financial benefits.
 - ii. I am unable to determine Google's total incremental benefits from the misconduct because Google has not produced information sufficient to determine even the direct benefits from the alleged misconduct, much less the indirect benefits from the alleged misconduct. Additionally, the benefits from both the alleged deceptive trade practices misconduct and the separate antitrust conduct alleged in this case play a role within an overall scheme to dominate the display advertising industry.
 - iii. [REDACTED]
[REDACTED]
[REDACTED] are insufficient and inappropriate to deter future misconduct.

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- g. Google has paid numerous fines and entered into several settlements related to past misconduct or alleged misconduct. These fines and settlements have not deterred Google from continuing to engage in misconduct.
- h. Based on my analysis of the three factors I have considered, the trier of fact should consider a penalty range of [REDACTED]. However, to the extent the trier of fact considers the additional relevant factors, revisions to this per violation amount may be appropriate. Given this range of penalty per violation and my violation counts, the total penalties related to each misconduct for their respective periods and associated with the Plaintiff States are as follows:
 - i. RPO – between \$2.06 and \$6.16 billion
 - ii. DRS – between \$1.18 and \$3.53 billion
 - iii. Bernanke – between \$7.27 and \$21.81 billion
 - iv. Equal Footing on AdX – between \$4.75 and \$14.24 billion

If the trier of fact finds that Google is liable for all four of the above misconducts and adopts my violation counts and penalties, the maximum penalty is \$21.81 billion as this figure is based on all Open Auctions during the longest period of misconduct. My analysis allows for flexibility to allow the trier of fact to determine penalties regardless of the combination of periods, Plaintiff States, or conducts for which they find Google liable in this matter.

- i. Google can pay a penalty as high as \$29.08 billion without impacting its day-to-day operations or bankrupting the company.

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III. BACKGROUND

A. Google

12. Founded in 1998, Google is a Delaware limited liability company with its principal place of business in Mountain View, California.⁶ Google has operated as a wholly owned subsidiary of Alphabet Inc. since 2015.⁷ Google states that “[Their] mission is to organize the world’s information and make it universally accessible and useful.”⁸ Initially started as a search engine, Google’s offerings now include a wide range of products and services including search, advertising, browsers, web-based services, mobile devices and software, entertainment, analytics, artificial intelligence, and cloud, among others, with user numbers in the billions.⁹ As of 2023, Google is the world’s dominant search engine, with over 90% global market share and trillions of searches each year.¹⁰ Google’s sites generate approximately 277 million unique visitors per day in the United States alone.¹¹

⁶ “Our Story,” available at https://about.google/intl/ALL_us/our-story/, accessed 12/29/2023. As I discuss above, Google refers to Google, LLC, formerly known as Google, Inc., and a subsidiary of the holding company, Alphabet, Inc. Throughout this report I rely on the financial statements and share prices of the reporting entities – Google, Inc. or Alphabet, Inc.

⁷ “Google Establishes Alphabet Holding Company,” Wall Street Journal, October 2, 2015, available at <https://www.wsj.com/articles/google-to-establish-alphabet-holding-company-after-close-of-trading-friday-1443801447>, accessed 12/29/2023.

⁸ “About Google,” available at https://about.google/intl/ALL_us/, accessed 12/29/2023; Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2022, p. 4.

⁹ “Google turns 20: how an internet search engine reshaped the world,” The Verge, September 17, 2018, available at <https://www.theverge.com/2018/9/5/17823490/google-20th-birthday-anniversary-history-milestones>, accessed 12/29/2023; Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2022, pp. 4-6; “Thank you for 25 years of curiosity,” available at <https://blog.google/inside-google/company-announcements/google-25th-birthday/>, accessed 1/2/2024.

¹⁰ “Search Engine Market Share Worldwide Jan – Dec 2023,” StatCounter, available at <https://gs.statcounter.com/search-engine-market-share/all/worldwide/2023>, accessed 1/10/2024; Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2022, p. 4.

¹¹ Top 50 Multi-Platform Properties (Desktop, Mobile, and Social), Comscore Media Metrix Multi-Platform, available at <https://www.comscore.com/Insights/Rankings?country=US>, accessed 1/8/2024.

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13. Until the company's restructuring in 2015, Google operated as a single segment and reported the entirety of its revenues as Google operations.¹² Starting in 2015, Google began reporting two operating segments – the “Google Segment” and “Other Bets.” Finally, from 2020 onwards,¹³ Google further differentiated its Google Segment revenues through its two primary operating segments: i) Google Services and ii) Google Cloud. Google Services consists of advertising, consumer subscriptions (e.g., YouTube TV), platforms (e.g., Google Play), and devices (e.g., the Pixel family of devices).¹⁴ Google Cloud operations include the Google Cloud platform and Google Workspace offerings.¹⁵ In addition, the company reports revenues from certain other businesses under “Other Bets.” Revenue from this segment was generated primarily from the sale of healthcare-related services and internet services, which collectively accounted for 0.50% of revenues in 2023.¹⁶

14. Google's primary source of revenue is advertising, which is included in its Google Services segment. In 2023, Google reported total revenues of over \$307 billion, of which \$237 billion was from advertising.¹⁷ Google sells advertising space to businesses across Google's own platforms, such as Google Search, Maps, and YouTube, or through third-party partners.¹⁸ Google's advertising technologies then work to show the most relevant ads at the most relevant times to

¹² Google Inc., Form 10-Ks for fiscal years ended December 31, 2009 through December 31, 2015. Google acquired Motorola in Q2 2012 and thus for the year 2013 reported a Google segment and Motorola Mobile segment. Google sold the Motorola business in October 2014. *See* Google Inc. Form 10-K year ended 2012; Google Inc. Form 10-K year ended 2014.

¹³ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2020, p. 33.

¹⁴ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2023, pp.31-32.

¹⁵ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2023, p. 32.

¹⁶ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2023, pp. 32, 35.

¹⁷ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2023, p. 35. Throughout this report, I use annual income statement data through December 31, 2023, to make comparisons across years and calculate growth rates. I also report Google's Q1 2024 revenues and earnings based on its latest available quarterly filing. Finally, I report balance sheet data as of March 31, 2024, based on Google's latest available quarterly filings. I reserve the right to update my analyses based on updated financial information made available by Google up to and during the time of trial.

¹⁸ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2023, p. 7; “How our business works,” available at <https://about.google/how-our-business-works/>, accessed 1/2/2024.

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users based on information from users' Google account (e.g. gender, age, language preference), general location, activity, or other information such as the time of day.¹⁹

B. Ad Tech

15. "Ad Tech" is shorthand for "advertising technology" and refers broadly to the software, systems, platforms, and tools used by publishers, advertisers, and other parties to buy, sell, and manage digital advertising.²⁰ Digital advertising refers to marketing through online channels, such as websites and streaming sites, and spans various media formats including text, image, audio, and video.²¹ As of 2023, global spending on digital advertising was estimated to top \$600 billion (USD), and was projected to approach one trillion (USD) by 2027.²² The United States is the largest digital advertising market in the world, with estimated 2023 digital ad spending of approximately \$225 billion.²³ Digital advertising can be divided into different segments, including search, display, instream video, in-app, social media, and email.²⁴ Display advertising, the segment at issue in this matter, is a subset of digital advertising and largely consists of the image and based

¹⁹ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2023, p. 7; "How our business works," available at <https://about.google/how-our-business-works/>, accessed 1/2/2024; "Ads and Data," Google Safety Center, available at <https://safety.google/privacy/ads-and-data/>, accessed 1/4/2024; Google Ad Center Help, available at <https://support.google.com/My-Ad-Center-Help/answer/12156161>, accessed 1/4/2024.

²⁰ *What is AdTech? Basics of The Ad Tech Ecosystem Explained*, AdButler Blog (May 5, 2021), <https://www.adbutler.com/blog/article/what-is-ad-tech-the-ad-tech-ecosystem-explained>.

²¹ *What is digital advertising? A beginner's guide*, Amazon, <https://advertising.amazon.com/library/guides/what-is-digital-advertising>.

²² *Digital Advertising in the United States – statistics & facts*, Statista (December 18, 2023), *Digital ad spend worldwide to pass \$600 billion this year*, eMarketer (July 14, 2023), <https://www.statista.com/topics/1176/online-advertising/#editorsPicks>; <https://www.emarketer.com/content/digital-ad-spend-worldwide-pass-600-billion-this-year>.

²³ *Internet Advertising Revenue Report, Full-year 2023 Results*, PwC (April 2024), https://s3.amazonaws.com/media.mediapost.com/uploads/IAB_PWC_Internet_Ad_Revenue_2024.pdf.

²⁴ "Types of Digital Advertising," IDG Advertising, available at <https://idgadvertising.com/types-of-digital-advertising/>, accessed 5/27/2024.

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ads that are displayed on web pages in desktop and mobile browsers.²⁵ Display advertising in the United States totaled approximately \$66 billion in 2023.²⁶

16. Participants in online display advertising include website publishers, advertisers, ad networks, and ad exchanges. Publishers own display advertising space.²⁷ Publishers monetize properties, such as websites and creative content hosted online, by selling display ad space to advertisers.²⁸ Advertisers purchase display advertising space.²⁹ The key element in an online display advertising transaction is an “impression.” A unique impression is created every time a single internet user visits a web page and views an online display ad. In the fraction of a second it takes for the page to load, that impression can be bought, sold, and filled with an advertisement for that particular user to see.³⁰ Thus, online display advertising is distinct from print advertising due to the ability of advertisers to micro-target their ads to a particular audience, and the ability of publishers to scale their online ad inventory.

17. In the early days of online display advertising, advertisers could only contract directly with publishers to get their ads placed, much like how the process had been done in print media for years.³¹ This changed when the first-ever piece of advertising technology emerged – the “ad server.”³² Publisher ad servers are used by publishers to fill ad slots on a website by matching

²⁵ “Display Advertising,” Jargon Buster IAB UK, available at <https://www.iabuk.com/jargon-buster?op=Apply&title=display>, accessed 5/27/2024.

²⁶ *Internet Advertising Revenue Report, Full-year 2023 Results*, PwC (April 2024), https://s3.amazonaws.com/media.mediapost.com/uploads/IAB_PWC_Internet_Ad_Revenue_2024.pdf.

²⁷ *What is AdTech? Basics of The Ad Tech Ecosystem Explained*, AdButler Blog (May 5, 2021), <https://www.adbutler.com/blog/article/what-is-ad-tech-the-ad-tech-ecosystem-explained>.

²⁸ *What is AdTech? Basics of The Ad Tech Ecosystem Explained*, AdButler Blog (May 5, 2021), <https://www.adbutler.com/blog/article/what-is-ad-tech-the-ad-tech-ecosystem-explained>.

²⁹ *What is AdTech? Basics of The Ad Tech Ecosystem Explained*, AdButler Blog (May 5, 2021), <https://www.adbutler.com/blog/article/what-is-ad-tech-the-ad-tech-ecosystem-explained>.

³⁰ *First-Party Ad Server vs. Third-Party Ad Server*, Playwire, available at <https://www.playwire.com/blog/first-party-ad-server-vs-third-party-ad-server>, accessed 4/22/2024.

³¹ The AdTech Book (Clearcode Services S.A., 2023), chapter 3; *Real-Time Bidding Explained – How do ad auctions work?*, Ad Tech Explained (August 22, 2021), https://adtechexplained.com/real-time-bidding-explained/#google_vignette.

³² The AdTech Book (Clearcode Services S.A., 2023), chapter 3.

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ads from direct campaigns, real-time bidding (“RTB”) auctions, and other media-buying processes.³³ advertiser ad servers are also used by advertisers to track performance (impressions, clicks, etc.) of online advertising campaigns across all publishers.³⁴ These respective ad servers, thus, allow publishers to better manage their online ad inventory to maximize their yield, and advertisers to better monitor the effectiveness of their online advertising campaigns.

18. Advertisers also utilize ad buying tools to purchase online ad inventory. These ad buying tools let advertisers “target” their ads by setting decision-engine parameters integral to their unique ad campaigns and automated purchasing decisions (e.g., details about the types of users to target, the bids to submit for various types of ad inventory, etc.).³⁵ Based on these parameters, the ad buying tool will place bids for the advertiser to purchase impressions.³⁶ Large advertisers typically utilize a specialized ad buying tool called a demand side platform (“DSP”).³⁷ A DSP is a platform that allows media buyers (advertisers and agencies) to run advertising campaigns and buy

³³ The AdTech Book (Clearcode Services S.A., 2023), chapter 6; “What Are First-Party Ad Servers (Publisher Ad Servers)?”, available at <https://www.mobileads.com/blog/ad-server/first-party-ad-server>, accessed 4/22/2024.

³⁴ The AdTech Book (Clearcode Services S.A., 2023), chapter 6; “What is an Ad Server and How Does It Work,” Playwire, available at <https://www.playwire.com/blog/what-is-an-ad-server-and-how-does-it-work>, accessed 4/23/2024.

³⁵ The AdTech Book (Clearcode Services S.A., 2023), chapter 4; “The Ultimate Guide to AdTech,” Hightouch, available at <https://hightouch.com/blog/adtech>, accessed 4/23/2024.

³⁶ “The Ultimate Guide to AdTech,” Hightouch, available at <https://hightouch.com/blog/adtech>, accessed 4/23/2024.

³⁷ “The Best Advertising Technology (AdTech) Tools For Ecommerce,” Ecommerce Tech, available at <https://ecommercetech.io/categories/advertising-technology>, accessed 4/23/2024. *See also* Deposition of [REDACTED], March 31, 2021 at 88:6-90:8, 93:19-94:3 (“The vast majority of [DSP customers] were actually agencies acting as an agent on behalf of their large advertisers ... Q. Would a very small advertiser ever use a DSP? ... A. In my opinion, they have no reason to. And, you know, like many of these other companies, and probably including Google, won't even return their phone call, right? It just doesn't make sense. It's a high maintenance, you know, salespeople, whatever.”); Deposition of [REDACTED], August 15, 2023 at 169:15-170:25 (“Q: What's the difference between DV360 and Google Display ads? ... A: Typically, different advertisers or different budgets within advertisers. As I said DV 3[60] is for more sophisticated advertisers where they're delegating to the agency. The agency is there to add their own value in terms of the art and science of optimizing for the advertiser's marketing objectives. With GDA, Google Display ads, increasingly, advertisers give more control to Google's systems to - through an automated process to achieve their marketing objectives. So it's machines versus humans. DV 3[60] is still a product for high-end advertisers that have practitioners that are specialists in programmatic advertising, figuring out what ads - what sites to run on, what to bid, how to measure success. GDA is a simpler product that scales to a much wider range of less sophisticated advertisers where -- you know, in oversimplified terms, you give it a bid and a budget and a marketing objective, and it does the rest. .. Q: Do large, sophisticated advertisers use Google Display ads? A: Yes, they use both.”)

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inventory from various ad exchanges and supply side platforms (“SSP”) through one user interface.³⁸ An SSP is a platform designed to help publishers sell their inventory through multiple demand sources, including ad networks, and in some cases directly to DSPs, in an automated, secure and efficient way.³⁹ Small advertisers, on the other hand, typically optimize and effectuate their online ad purchases using pared-down analogues of DSPs, called ad networks,⁴⁰ generally relying on just one buying tool.⁴¹ Large advertisers may also use ad networks.⁴²

19. As most display advertising today is sold via RTB through an ad exchange, it is instructive to consider how this process works. When a user visits a web page with an available ad slot, a publisher ad server is alerted and receives certain information about the user.⁴³ The publisher ad server checks for any direct ad campaigns matching the user and, if none are identified, offers the impression on an RTB auction through an ad exchange,⁴⁴ a platform that facilitates the buying and selling of available impressions between advertisers, who place their bids via DSPs or ad networks, and publishers, who sell their inventory via SSP.⁴⁵ The ad exchange makes the impression available to all bidders via a bid request.⁴⁶ Demand side sources, including DSPs,

³⁸ The AdTech Book (Clearcode Services S.A., 2023), chapter 4; “Programmatic Advertising 101: What is a DSP?,” Basis Technologies, available at <https://basis.com/blog/programmatic-101-dsps-explained>, accessed 4/23/2024.

³⁹ The AdTech Book (Clearcode Services S.A., 2023), chapter 4; “What is a Supply-Side Platform (SSP)? Here’s everything you need to know,” Amazon Ads, available at <https://advertising.amazon.com/library/guides/supply-side-platform>, accessed 4/23/2024.

⁴⁰ Deposition of [REDACTED], March 31, 2021 at 88:13-90:2 (“networks in general have a very simple UI ... where you give us your objective ... and the network does everything automatically for your and you get a good outcome.”)

⁴¹ The AdTech Book (Clearcode Services S.A., 2023), chapter 4.

⁴² *See, for example*, Deposition of Tim Craycroft, August 15, 2023 at 169:15-170:25.

⁴³ The AdTech Book (Clearcode Services S.A., 2023), chapter 9.

⁴⁴ The AdTech Book (Clearcode Services S.A., 2023), chapter 9.

⁴⁵ The AdTech Book (Clearcode Services S.A., 2023), chapter 4; “DSP, SSP, and Ad Exchange: What’s the Difference?,” Mountain, available at <https://mountain.com/blog/dsp-ssp-ad-exchange/>, accessed 4/23/2024. Ad exchanges may be combined with SSPs, for example since 2018 Google’s AdX (ad exchange) and DFP (SSP) have been combined under Google Ad Manager. *See* “Introducing Google Ad Manager,” Google Blog, June 27, 2018, available at <https://blog.google/products/admanager/introducing-google-ad-manager/>, accessed 5/15/2024.

⁴⁶ The AdTech Book (Clearcode Services S.A., 2023), chapter 9; “What is a Bid Request and How Does it Work?,” Set Up Ad, available at <https://setupad.com/blog/bid-request/>, accessed 4/23/2024.

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evaluate the bid request in relation to targeting parameters.⁴⁷ A bid is placed, and the ad markup enclosed in a bid response.⁴⁸ The ad exchange receives the bids, and the impression generally goes to the highest bidder, with the winner's ad markup being sent to the browser.⁴⁹ Typically, the highest bidder pays the price of the second-highest bid, plus an additional small amount (usually \$0.01), in what is known as a second-price auction.⁵⁰ Ad exchanges charge publishers a share of the transaction value, known as a "take rate," to facilitate the transaction, typically in the range of 10 to 30%.⁵¹ This entire process happens in real time when an ad is loaded onto the page, usually within 100-150 milliseconds.⁵² By way of reference, it takes about 300 milliseconds to blink.⁵³

20. The flow of display advertising transactions through these platforms is illustrated in **Figure 1**, below.⁵⁴

⁴⁷ The AdTech Book (Clearcode Services S.A., 2023), chapter 9; "What is a Bid Request and How Does it Work?," Set Up Ad, available at <https://setupad.com/blog/bid-request/>, accessed 4/23/2024.

⁴⁸ The AdTech Book (Clearcode Services S.A., 2023), chapter 9; "What is a Bid Request and How Does it Work?," Set Up Ad, available at <https://setupad.com/blog/bid-request/>, accessed 4/23/2024.

⁴⁹ The AdTech Book (Clearcode Services S.A., 2023), chapter 9; "What is a Bid Request and How Does it Work?," Set Up Ad, available at <https://setupad.com/blog/bid-request/>, accessed 4/23/2024. I understand that some bids may be excluded based on criteria set by the publisher. See "Protections Overview, Google Ad Manager Help, available at <https://support.google.com/admanager/answer/2913553>, accessed 5/27/2024.

⁵⁰ The AdTech Book (Clearcode Services S.A., 2023), chapter 9. "Second-Price Auction," Smartclip, available at <https://smartclip.tv/adtech-glossary/second-price-auction/>, accessed 4/23/2024; For reference, second-price auctions have long been the industry norm in programmatic advertising. However, Google transitions to a first-price auction model in 2019. [*Why Google Switched to First Price Auction? Insider's Insight*, AdPushup (June 25, 2023), <https://www.adpushup.com/blog/first-price-auction/#:~:text=6%20Mins%20Read,industry%20norm%20in%20programmatic%20advertising>. See also, Expert Report of Dr. Matthew Weinberg, Section 2.A.1, June 7, 2024.

⁵¹ "The Best Ad Exchanges for Publishers," Publisher Growth, available at <https://publishergrowth.com/category/platform/ad-exchanges>, accessed 5/27/2024.

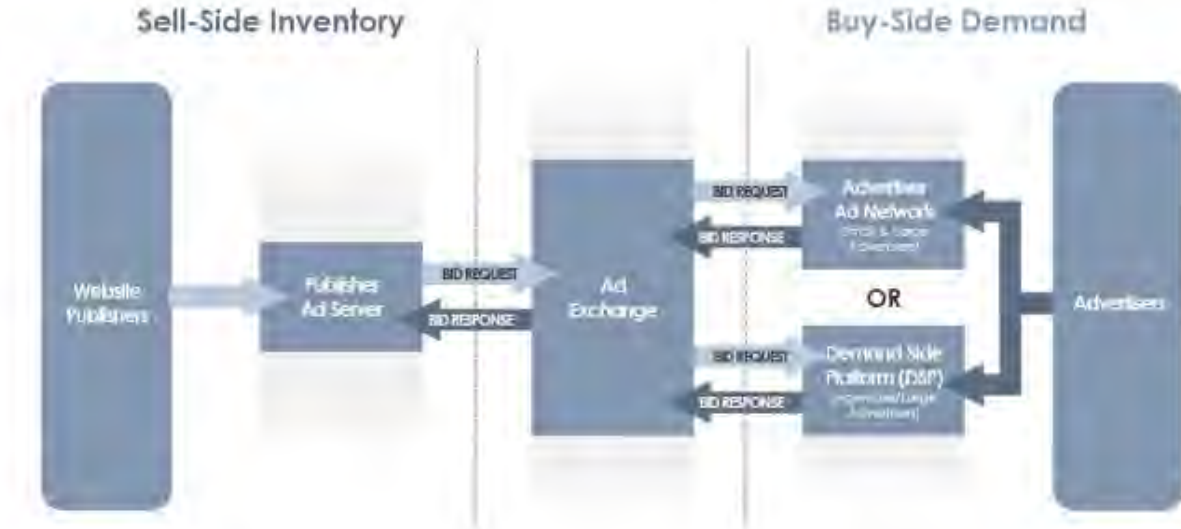
⁵² The AdTech Book (Clearcode Services S.A., 2023), chapter 9; "What is Programmatic Advertising? A Complete Guide for Agencies," Agency Analytics, available at <https://agencyanalytics.com/blog/what-is-programmatic-advertising>, accessed 4/23/2024.

⁵³ The AdTech Book (Clearcode Services S.A., 2023), chapter 9.

⁵⁴ DOJ Complaint at ¶53, Figure 3.

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Figure 1



C. The Evolution of Google’s Role in the Ad Tech Space

21. Google entered the display advertising industry in the early 2000s when it launched AdSense, enabling publishers to display AdWords ads on their own websites.⁵⁵ In 2005, Google then introduced site targeting to AdWords, which gave advertisers the ability to “target their ads to thousands of specific content sites across the Google Network,”⁵⁶ enabling “AdWords advertisers and AdSense publishers [to] connect in a way not previously possible.”⁵⁷

22. By the mid-2000’s, Google recognized that publisher ad servers set the rules for how and to whom ad spaces are sold.⁵⁸ Accordingly, Google developed its own publisher ad server.⁵⁹ When Google’s publisher ad server failed to gain traction in the ad serving market, the company pivoted in 2008 to acquire their market-leading competitor DoubleClick in a deal valued

⁵⁵ *The History of Google Ads 20 Years in the Making*, <https://instapage.com/blog/google-adwords-infographic/>.

⁵⁶ “Site Targeting,” Google Blog, April 25, 2005, available at https://googlepress.blogspot.com/2005/04/site-targeting_25.html, accessed 5/27/2024; “Site targeting: a refresher,” Google Blog, December 30, 2005, available at <https://adsense.googleblog.com/2005/12/site-targeting-refresher.html>, accessed 5/27/2024.

⁵⁷ “Site targeting: a refresher,” Google Blog, December 30, 2005, available at <https://adsense.googleblog.com/2005/12/site-targeting-refresher.html>, accessed 5/27/2024.

⁵⁸ *How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

⁵⁹ *How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

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at \$3 billion.⁶⁰ DoubleClick operated the industry-leading publisher ad server, DoubleClick for Publishers (“DFP”).⁶¹ Upon combining DoubleClick with Google’s nascent publisher ad server, Google was estimated to control approximately 60% of the publisher ad server market in 2008.⁶² Since then, [REDACTED]

[REDACTED]⁶³

23. When Google purchased DoubleClick, it also acquired the company’s up-and-coming ad exchange technology, DoubleClick Ad Exchange.⁶⁴ In 2009, Google announced the DoubleClick Ad Exchange (now known as Google Ad Exchange or “AdX”), describing it as “a real-time marketplace that helps large online publishers on one side; and ad networks and agency networks on the other, buy and sell display advertising space.”⁶⁵ Today AdX is estimated to account for at least 50% of the ad exchange market.⁶⁶

24. In 2010, Google then acquired Invite Media for approximately \$81 million.⁶⁷ Invite Media was an ad buying tool designed for large advertisers, allowing them to buy ad space on multiple ad networks at the same time.⁶⁸ At the time, Google had been working on developing its

⁶⁰ *How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

⁶¹ *DOJ’s Ad Tech Antitrust Case Against Google: A Brief Overview*, Congressional Research Service Legal Sidebar (May 5, 2023), <https://crsreports.congress.gov/product/pdf/LSB/LSB10956>.

⁶² *How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

⁶³ See Expert Report of Dr. Joshua Gans, June 7, 2024, Section VI.C.

⁶⁴ “Google Buys DoubleClick for \$3.1 Billion,” New York Times, April 14, 2007. .

⁶⁵ “The DoubleClick Ad Exchange: growing the display advertising pie for everyone,” Google Blog, September 17, 2009, available at <https://googleblog.blogspot.com/2009/09/doubleclick-ad-exchange-growing-display.html>, accessed 5/27/2024.

⁶⁶ *How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>. See also Expert Report of Dr. Joshua Gans, June 7, 2024, Section V.D, IX.C.

⁶⁷ *How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

⁶⁸ *How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

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DV360 tool provide the same service.⁶⁹ Today DV360, Google's DSP, is the largest platform for agencies and big advertisers with an estimated 40% market share as to large advertiser buying tools.⁷⁰ Google Ads (formerly AdWords) is now the company's advertiser ad network, used mostly by small brands, and has at least a 50% market share as to small advertiser buying tools.⁷¹

25. In 2011, Google acquired AdMeld for approximately \$400 million.⁷² AdMeld's technology helped big publishers compare and identify the best ad prices that advertisers were offering on ad exchanges competing with Google.⁷³ This technology was known as "yield management" or "yield optimization," and represented a threat to Google's ad exchange and publisher ad server dominance.

26. Over the last fifteen years Google has grown their sell-side (publisher), buy-side (advertiser), and ad exchange market shares, to the point where today the company has a significant presence in all parts of Ad Tech.⁷⁴

27. The total percentage of advertiser spend extracted by ad tech intermediaries has a substantial impact on the revenues earned by publishers and the return on investment to advertisers.

According to Google's internal documents, [REDACTED]

[REDACTED]

[REDACTED]⁷⁵

⁶⁹ *How Three Mergers Buttressed Google's Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

⁷⁰ *How Three Mergers Buttressed Google's Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

⁷¹ *How Three Mergers Buttressed Google's Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>. See also Expert Report of Dr. Joshua Gans, June 7, 2024, Section V.E.

⁷² *How Three Mergers Buttressed Google's Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

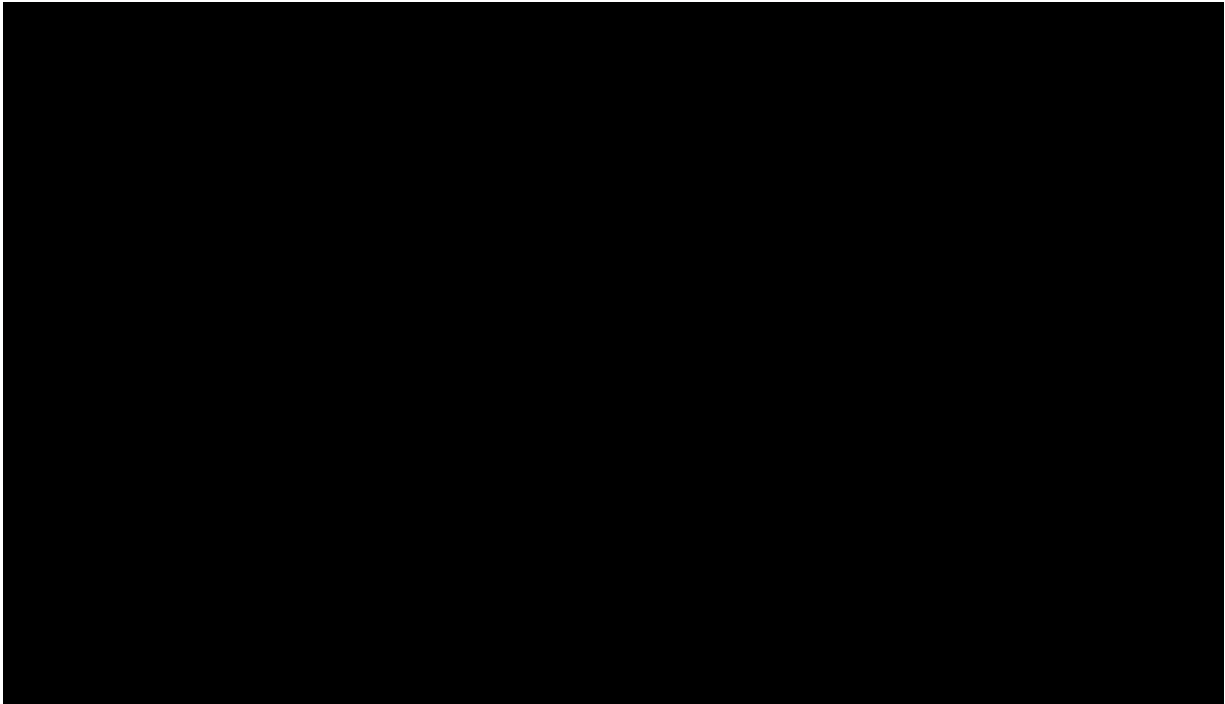
⁷³ *How Three Mergers Buttressed Google's Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

⁷⁴ DOJ Complaint at ¶75, Figure 5.

⁷⁵ [REDACTED]

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Figure 2



D. Summaries of Auction Manipulations and Alleged Misconduct

28. I understand that the Plaintiff States allege that many of Google's acts, practices, misrepresentations, and omissions from 2013 to the present are unfair, deceptive, false, and/or misleading, and/or have the capacity or tendency to deceive or are likely to deceive. I further understand that Dr. Matthew Weinberg and Dr. Joshua Gans provided expert reports on behalf of the Plaintiff States, which analyze and offer opinions regarding the operation, impact, harm, and misleading and deceptive acts and practices related to Google's conduct and auction manipulations, including Reserve Price Optimization, Dynamic Revenue Sharing, and Project Bernanke, as well as Header Bidding, and the Network Bidding Agreement between Facebook and Google. I have reviewed and rely upon these reports, and nothing herein is intended to refute or dispute those opinions. For context, I provide a brief summary below of my understanding of Google's auction manipulations and the alleged misconduct based primarily on my review and

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reliance on documents produced in this lawsuit, as well as the expert reports of Professors Weinberg and Gans.

29. As a preliminary matter, however, I understand that, starting at least as early as 2010 and running through September 2019, Google represented to both publishers and advertisers that AdX was operated as a second-price auction.⁷⁶ Auction participants based their strategies and evaluated the outcome of auctions believing that Google's representation was true. For example, a second-price auction structure incentivizes buyers to bid their "true value," which is the maximum amount a buyer is willing to pay for an impression.⁷⁷ However, through various Google programs implemented starting in at least 2013, I understand that Google manipulated the auction process such that AdX auctions could no longer be characterized as they were represented, including through RPO, DRS, and Project Bernanke and their various iterations. Further, I understand that Google made misrepresentations and concealed important information related to this conduct, even concealing some of these programs entirely, thus misleading and deceiving

⁷⁶ See, e.g., GOOG-DOJ-29803801 at -804 (March 2016 RPO Brief states under external verbal talking points "The AdX Auction model is 2nd price, as described in Help Center"); "Google's Scott Spencer On DoubleClick Ad Exchange Auction And Data Management," ad exchanger, February 9, 2010, available at <https://www.adexchanger.com/ad-exchange-news/googles-scott-spencer-on-doubleclick-ad-exchange-auction-and-data-management/>, accessed 4/19/2024 ("AdX is a second price auction with minimum CPMs set by the publisher."); GOOG-NE-06567486 at -490 (Master Press document "Ad Exchange uses a second price auction model"); GOOG-NE-13340735 [REDACTED]

[REDACTED] Declaration of [REDACTED], August 5, 2023 at ¶ 24 ("In a second-price auction, advertisers are incentivized to bid an amount equivalent to the actual value they place on an impression because they will only need to pay the amount of the second-highest bid if they win."); "Rolling out first price auctions to Google Ad Manager partners," Google Ad Manager, September 5, 2019, available at <https://blog.google/products/admanager/rolling-out-first-price-auctions-google-ad-manager-partners>, accessed 4/19/2024/. See also Expert Report of Dr. John Chandler, June 7, 2024, §X.C.G.

⁷⁷ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9; GOOG-AT-MDL-B-002086688 ("Now second price auctions have various theorems that (non-colluding) actors have optimal strategies to bid their true value."); "Google's Scott Spencer On DoubleClick Ad Exchange Auction And Data Management," ad exchanger, February 9, 2010, available at <https://www.adexchanger.com/ad-exchange-news/googles-scott-spencer-on-doubleclick-ad-exchange-auction-and-data-management/>, accessed 4/19/2024 ("...incentivizes buyers to bid the most that they're willing to pay for a given piece of inventory and it minimizes the need to 'game' the system."). See also Expert Report of Dr. John Chandler, June 7, 2024, §VI.D.

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auction participants and causing them to behave differently than they would have but for Google's misconduct.

i. Reserve Price Optimization

30. I understand that with Reserve Price Optimization ("RPO"), Google used buyer's historical bidding information and other transaction data prior to seeing live bids in order to determine a reserve price that Google believed would optimize AdX revenue, and that Google then used this artificial reserve price in AdX instead of the reserve price set by the publisher, thus overriding the reserve price that had been set by the publisher.⁷⁸ In addition, RPO was used to set the reserve price just below the highest bidder's true value, or "as close to the anticipated first price as possible in order to trade buyer for seller surplus."⁷⁹ This phenomenon is illustrated in **Figure 3**, below.⁸⁰

Figure 3

Reserve Price Optimization: Guessing top bid



⁷⁸ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9. See also, GOOG-NE-04719370; GOOG-AT-MDL-004408571 at -573; GOOG-NE-06842715 at -718.

⁷⁹ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9.

⁸⁰ GOOG-NE-13202730 at -739.

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31. I also understand that while RPO was launched in phases between March/April and October 2015,⁸¹ Google did not announce this program to its customers prior to its launch.⁸² In fact, Google did not announce the program until May 12, 2016, over a year after its initial rollout, which it announced in a blog post under the name “optimized pricing.”⁸³ At that time, publishers could not opt out of RPO.⁸⁴ [REDACTED]

[REDACTED].⁸⁵ In any event, on or about September 25, 2019, Google publicly migrated to a first-price auction format on AdX, thus effectively ending the RPO program in what Google had represented to be a second price auction.⁸⁶

32. I also understand that Google concealed material information from publishers and advertisers during the period RPO was concealed, and intended to communicate about the program only if it was noticed externally. For example, a March 2015 internal email states, “We do not plan to announce anything externally for now, and the affected commercialization teams are ready with a PR approved reactive message when someone notices.”⁸⁷ Another March 2015 internal email states, “when it [RPO] is noticed externally (likely), we use the non-specific language in the

⁸¹ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9; Defendant Google LLC’s First Amended Responses and Objections to Plaintiffs’ Third Set of Interrogatories, Responses to Interrogatory No. 6; GOOD-AT-MDL-003996097; GOOG-DOJ-29803801; GOOG-AT-MDL-004408571 at -572; GOOG-DOJ-15428245 at -246; GOOG-DOJ-15435288 at -289.

⁸² See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9.

⁸³ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9. See also, Google Ad Manager “Smarter optimizations to support a healthier programmatic market,” May 12, 2016, available at <https://blog.google/products/admanager/smarter-optimizations-to-support/>, accessed 5/26/2024; GOOG-AT-MDL-001391101; GOOG-AT-MDL-004408571 at -572.

⁸⁴ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9; GOOG-NE-06842715 at -718.

⁸⁵ See GOOG-DOJ-15418450; GOOG-AT-MDL-B-001109245. See also, Expert Report of Dr. John Chandler, June 7, 2024, §X.G.

⁸⁶ GOOG-DOJ-AT-02202934; “Rolling out first price auctions to Google Ad Manager partners,” Google Ad Manager, September 5, 2019, available at <https://blog.google/products/admanager/rolling-out-first-price-auctions-google-ad-manager-partners>, accessed 4/19/2024. See also Defendant Google LLC’s First Amended Responses and Objections to Plaintiffs’ Third Set of Interrogatories, Responses to Interrogatory No. 6.

⁸⁷ GOOG-NE-06591119.

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comms doc (we don't say we are optimizing reserves specifically)."⁸⁸ Internally, Google considered randomizing RPO price floors to "limit attention."⁸⁹

33. I further understand that RPO impacted both publishers and advertisers because it led to lower payoff to advertisers and it could prevent publishers from effectively optimizing revenue, and that such negative impacts partially stem from Google's concealment of RPO.⁹⁰

34. In addition, I understand that both before and after RPO was announced as optimized pricing, RPO impacted publisher behavior.⁹¹ For example, by concealing RPO, Google prevented publishers from effectively optimizing revenue, and even after it was disclosed, publishers might set suboptimal reserves on any impression for which RPO may have been active.⁹² I also understand that some publishers might prefer outcomes without RPO than with RPO.⁹³

35. Google also impacted advertiser behavior through its second-price auction representation and concealment of RPO. Namely, I understand that Google's representation that it was running a second-price auction encouraged advertisers to bid their true value for impressions, which over time caused later AdX reserve prices to increase,⁹⁴ which, in turn, led to a payoff loss for advertisers by decreasing win rates and increasing the average clearing price in later AdX auctions.⁹⁵

⁸⁸ GOOG-AT-MDL-014566000. *See also* GOOG-NE-12737317 ("comms strategy is not to discuss Dynamic RPO in-detail comms forum... This is INTERNAL ONLY as well"); GOOG-AT-MDL-015109224 ("pubs don't know about RPO").

⁸⁹ GOOG-AT-MDL-017664768.

⁹⁰ *See* Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9.A.1.

⁹¹ *See* Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9.A.1.

⁹² *See* Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9.A.1.

⁹³ *See* Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9.A.1.

⁹⁴ As Dr. Weinberg opines, if advertisers had been aware of RPO, they could have improved their gains over time by shading their bids from the beginning.

⁹⁵ *See* Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9.B. Dr. Weinberg opines that RPO's effect on AdX is ambiguous because it both decreases the AdX win rate and increases the average AdX clearing price. However, Dr. Weinberg concludes that the gains from the increase in average price likely outweigh the losses from a decreased win rate as Google is a sophisticated actor.

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ii. Dynamic Revenue Sharing

36. I understand that with Dynamic Revenue Share (“DRS”), Google manipulated its AdX take rate to win impressions it otherwise would have lost but-for DRS.⁹⁶ Prior to DRS, AdX imposed a 20% take rate on winning advertisers bids submitted through AdX.⁹⁷ Through DRS, Google adjusted its 20% take rate to win impressions.

37. I also understand that Google ran three versions of the DRS program – DRSv1, DRSv2, and tDRS.⁹⁸ In August of 2015, Google fully launched an initial version of DRS—DRSv1—without announcing it to publishers and advertisers, and opted all publishers into the program without their knowledge.⁹⁹ [REDACTED]

[REDACTED],¹⁰⁰
and as early as September 2014, internal teams at Google had agreed to launch DRS as a “silent launch.”¹⁰¹

38. With DRSv1, Google allowed for the DRS program to lower AdX’s take rate below 20% after soliciting and “peeking” at bids in order to win an impression.¹⁰² This phenomenon is illustrated in **Figure 4**, below.¹⁰³ I also understand that with DRSv1, AdX did not run a true second price auction.¹⁰⁴

⁹⁶ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.E. See also, GOOG-AT-MDL-014568201; GOOG-DOJ-AT-02423615.

⁹⁷ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7. See also, GOOG-DOJ-14265301.

⁹⁸ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7 A-C.

⁹⁹ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.A. See also, GOOG-TEX-00777528 at -530; GOOG-NE-09485306 at -5453; GOOG-AT-MDL-B-004435235 at 309; GOOG-DOJ-14368357 at 357; Defendant Google LLC’s First Amended Responses and Objections to Plaintiffs’ Third Set of Interrogatories, Responses to Interrogatory No. 6.

¹⁰⁰ See Expert Report of Dr. John Chandler, June 7, 2024, §X.F, G.

¹⁰¹ GOOG-DOJ-14265301.

¹⁰² See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.A. See also, GOOG-AT-MDL-014568201; GOOG-DOJ-AT-02423615.

¹⁰³ GOOG-NE-13204982 at -983.

¹⁰⁴ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.A.

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Figure 4



39. I also understand that in a subsequent iteration of DRS launched in December 2016—referred to as DRSv2—AdX would either decrease AdX’s take rate below 20% or increase AdX’s take rate above 20% to win impressions it would not have won if the take rate were 20%, depending on various factors.¹⁰⁵ Google announced DRSv2 (under a different name) when it was launched and allowed publishers to opt out of the program (if a publisher opted out, DRSv1 was turned off as well), but advertisers and ad buying tools could not.¹⁰⁶ I also understand that DRSv2 tracked “debts” incurred by publishers and advertisers, and that a publisher could see decreased revenues through DRSv2.¹⁰⁷

40. A third iteration of DRS, tDRS, was implemented in July 2018 (after Google ran experiments in 2017) and replaced DRSv2.¹⁰⁸ The “t” in tDRS stands for “truthful.” I understand

¹⁰⁵ GOOG-AT-MDL-B-004377628 at -759 and -761; Defendant Google LLC’s First Amended Responses and Objections to Plaintiffs’ Third Set of Interrogatories, Responses to Interrogatory No. 6; GOOG-AT-MDL-001004706 at -743; GOOG-NE-09485306 at -405; GOOG-AT-MDL-008842393 at -403.

¹⁰⁶ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.B.

¹⁰⁷ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.B.

¹⁰⁸ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.C; Google’s First Amended Responses and Objections to Plaintiffs’ Third Set of Interrogatories, Response to Interrogatory No. 6; GOOG-DOJ-13949282 at tab “Q3Q4 2018” row 7.

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the program was revised to adjust the AdX take rate based on a predictive model instead of “peeking” at actual bids and adjusting the revenue share thereafter.¹⁰⁹ tDRS was in place from July 2018 until late 2019, when Google shifted to a first price auction format in AdX.¹¹⁰

41. It is my understanding that Google concealed material information from publishers and advertisers by not disclosing DRsv1, which negatively impacted them and prevented them from employing optimal strategies.¹¹¹ For example, I understand that but for Google’s omissions, publishers who believed that AdX ran a standard second price auction would have set different reserve prices if they had been aware of DRsv1.¹¹² Moreover, I understand that by not revealing DRsv1 and leading advertisers to believe the AdX auction was a standard second-price auction, advertisers would engage in suboptimal behavior.¹¹³ For example, if advertisers had known of DRsv1, they could shade their bids to get a higher return.¹¹⁴

42. The same is true of DRsv2. I understand that some aspects of DRsv2 were misleading to advertisers and publishers based, in part, on Google’s omissions in clearly disclosing the concept of debt with DRsv2, which mislead both advertisers and publishers regarding how much they are paying or paid out, prevented them from employing optimal bidding strategies, and

¹⁰⁹ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.C; GOOG-DOJ-AT-02423615.

¹¹⁰ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.C; Defendant Google LLC’s First Amended Responses and Objections to Plaintiffs’ Third Set of Interrogatories, Responses to Interrogatory No. 6; GOOG-DOJ-15130321; GOOG-DOJ-AT-01509153; GOOG-DOJ-AT-01516187 at -205; “Rolling out first price auctions to Google Ad Manager partners,” Google Ad Manager, September 5, 2019, available at <https://blog.google/products/admanager/rolling-out-first-price-auctions-google-ad-manager-partners>, accessed 4/19/2024.

¹¹¹ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.D.1; Section 7.F.2.

¹¹² See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.D.1.

¹¹³ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.F.2.

¹¹⁴ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.F.2.

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obscured feedback to advertisers.¹¹⁵ I also understand that certain aspects of tDRS were misleading to publishers.¹¹⁶

iii. Project Bernanke

43. I understand that Project Bernanke and its subsequent iterations, Global Bernanke and First Price Bernanke, facilitated both the effects of collusion among Google Display Network (“GDN”) advertisers without their knowledge, as well as overbidding (bidding above one’s true value”) in auctions.¹¹⁷ I also understand that Google never disclosed Project Bernanke or its progeny to publishers or advertisers,¹¹⁸ and that Google ran ongoing Bernanke experiments on live auctions while concealing the program.¹¹⁹ Indeed, internal Google documents refer to Project Bernanke as [REDACTED]

[REDACTED]

[REDACTED]¹²¹

44. Google launched Project Bernanke November 2013.¹²² I understand that Project Bernanke manipulates the highest and second highest GDN bids before sending them to the AdX auction, and that under Project Bernanke, Google created a “pool” for each publisher (about which, I understand publishers were unaware)¹²³ that was added to or taken from depending on whether

¹¹⁵ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.G. Moreover, one internal Google document advocating for tDRS states that [REDACTED]

¹¹⁶ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.G.

¹¹⁷ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.

¹¹⁸ GOOG-AT-MDL-006218271 at -287; Letter from Freshfields Bruckhaus, Deringer US LLP dated May 24, 2024 “Re: State of Texas et al. v. Google LLC, No. 4:20-cv-957-SDJ (E.D. Tex.),” p. 8.

¹¹⁹ See Expert Report of Dr. John Chandler, June 7, 2024, §X.G.

¹²⁰ GOOG-NE-10929507, at -507, -514, -515.

¹²¹ GOOG-DOJ-15445619.

¹²² GOOG-DOJ-28386151 at -165; GOOG-DOJ-03875910; GOOG-DOJ-AT-01130405; Defendant Google LLC’s First Amended Responses and Objections to Plaintiffs’ Third Set of Interrogatories, Responses to Interrogatory No. 6.

¹²³ See Expert Report of Dr. Joshua Gans, June 7, 2024, Section VIII.B.

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GDN's take rate exceeded or fell below a certain percentage.¹²⁴ In August 2015, Google launched Global Bernanke, which I understand maintained a single pool for all publishers across AdX.¹²⁵

45. I also understand that under Projects Bernanke and Global Bernanke, individual publisher revenues could decrease, and both iterations could lead to a reduction in ad quality and revenue per mille for publishers.¹²⁶ In addition, I understand that Projects Bernanke and Global Bernanke overcharged advertisers¹²⁷ and would decrease the win rate of non-GDN advertisers.¹²⁸

46. I also understand that Google concealed material information from publishers and advertisers by concealing Projects Bernanke and Global Bernanke. For example, all publishers likely would have changed their behavior had they known about Projects Bernanke and Global Bernanke by raising their reserve prices in order to maximize their revenue.¹²⁹ Moreover, I understand that because Google never disclosed Projects Bernanke and Global Bernanke to advertisers, advertisers thought they were participating in a true second price auction and bid their true value, but they would have shaded their bids in order to get higher payoffs had they known about Projects Bernanke and Global Bernanke.¹³⁰

47. On or about October 25, 2019, after Google transitioned to a first price auction, Google launched an updated version of Project Bernanke, sometimes called "Alchemist," but referred to herein as "First Price Bernanke."¹³¹ Under First Price Bernanke, I understand that GDN

¹²⁴ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.A.

¹²⁵ Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, p. 13. I understand Global Bernanke had certain per publisher requirements related to margin and publisher revenue. See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.B.

¹²⁶ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.C.1, Section 8.C.2.

¹²⁷ See Expert Report of Dr. Joshua Gans, June 7, 2024, Section VIII.B.

¹²⁸ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.E.1.

¹²⁹ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.C.3.

¹³⁰ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.E.2.

¹³¹ GOOG-DOJ-AT-02224828 at -828; Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6. See also Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.G referring to this version of Bernanke as "First-Price Project Bernanke."

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continued to manipulate advertisers' bids before sending them to AdX, by implementing either collusion (which led to submitting lower bids) or overbidding (which led to submitting higher bids) amongst advertisers.¹³² Collusion allowed for more aggressive bid-shading and increased GDN's payoff at the expense of publishers' revenue, while overbidding increased publishers' revenue at the expense of non-GDN advertisers.¹³³ Each aspect changed AdX's clearing price. I understand that First Price Bernanke still operates today.¹³⁴

iv. Header Bidding

48. I understand that Header Bidding is a real time bidding technology that was developed as a reaction to the inefficiencies of waterfalling,¹³⁵ a process used by ad servers to sell an impression,¹³⁶ and to circumvent Google's ad exchange.¹³⁷ I also understand that Google was aware of Header Bidding's positive impact on publishers. For example, internal Google communications acknowledge that Header Bidding is "[g]ood for" publishers because it permits "universal competition with real-time pricing,"¹³⁸ that "[p]ublishers are likely fine with header bidding," because "they make more money with it."¹³⁹ I also understand that Google recognized the competitive threat that Header Bidding posed to AdX.¹⁴⁰ For example, an internal Google document states that one of its priorities was [REDACTED]

¹³² See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.G.

¹³³ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.G.

¹³⁴ Complaint at ¶589.

¹³⁵ Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 3.B; GOOG-NE-10780865.

¹³⁶ Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 3.B.

¹³⁷ See also Expert Report of Dr. Joshua Gans, June 7, 2024, Section III.D. See also, "Header Bidding 101," Forbes, March 2, 2022, available at <https://www.forbes.com/sites/forbesbusinesscouncil/2022/03/02/header-bidding-101/?sh=1304d401a970>, accessed 3/15/2024.

¹³⁸ GOOG-AT-MDL-001110980 at -997.

¹³⁹ GOOG-NE-12787680.

¹⁴⁰ Expert Report of Dr. Joshua Gans, June 7, 2024, Section VII.B.

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Bidding,”¹⁴¹ and another shows that Google initiated an internal project called “Header Bidding Observatory” to monitor and counter what it called the “largest competitive threat to AdX.”¹⁴²

49. Accordingly, I understand that Google undertook various efforts to respond to and suppress the competitive threat of Header Bidding, [REDACTED],¹⁴³ by restricting publisher use of line items in publisher ad server settings, redacting key data fields from AdX databases provided to publishers, and entering into the Facebook Network Bidding Agreement to prevent Facebook’s investment in Header Bidding technology.¹⁴⁴ I further understand that Google’s Exchange Bidding, whereby third-party exchanges could bid in auctions against AdX, was another response to the competitive threat of Header Bidding.¹⁴⁵

50. I understand that Header Bidding improves publisher revenue, including as compared to Google’s Exchange Bidding, and thus, suppression of Header Bidding negatively impacts publishers.¹⁴⁶

v. Equal Footing Misrepresentation

51. I understand that since at least 2019,¹⁴⁷ Google has publicly represented that it ran a transparent auction where all bidders on Google’s ad exchange competed on equal footing. For example, a Google blog from March 2019 on first price auctions for Google Ad Manager noted

¹⁴¹ GOOG-NE-04421287.

¹⁴² GOOG-TEX-00635680 at -681.

¹⁴³ GOOG-TEX-00036144 at -146-147.

¹⁴⁴ See Expert Report of Dr. Joshua Gans, June 7, 2024, Section IX.B. Dr. Gans also opines that Google’s implementation of Unified Pricing Rules interfered with publishers’ use of Header Bidding.

¹⁴⁵ See Expert Report of Dr. Joshua Gans, June 7, 2024 Section IX.B.

¹⁴⁶ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 5.B.

¹⁴⁷ Google document indicate that this representation was made before 2019 as well, including as early as 2017. See GOOG-DOJ-13899276 (Internal Google documents showing representation was shared with “partner exchanges” as early as March 2017); see also GOOG-AT-MDL-B-002019839 at -842 (Email from Google to a media company dated January 3, 2018) and GOOG-AT-MDL-001163787 (Email from Google to authorized buyers re: “Auction Dynamics Clarification” dated April 3, 2019).

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that Google was creating a “fair and transparent market for everyone.”¹⁴⁸ Additionally, Google’s webpage from at least November of 2019 explains how open bidding works, and represents that “[a]ll participants in the unified auction, including Authorized Buyers and third-party yield partners, compete equally for each impression on a net basis.”¹⁴⁹

52. I further understand that Google’s representations that it ran a transparent auction where participants were allegedly on equal footing were false, misleading, and deceptive due to various auction manipulations, including Project Bernanke, as well as Google’s preferential treatment of Facebook through the Google/Facebook Network Bidding Agreement (“NBA”).

53. I understand that on September 28, 2018, Google entered into the NBA with Facebook to allow the Facebook Audience Network (“FAN”) to participate in Google’s new exchange bidding service, and from Google’s perspective, to fight off the threat of Header Bidding and FAN.¹⁵⁰ It is also my understanding that as part of the NBA, Google and Facebook agreed to a minimum spend requirement and that the NBA would remain confidential and not be disclosed publicly, which helped Facebook manage its public perception.¹⁵¹ I understand that the NBA also provided Facebook with numerous other advantages, including a grant of direct remittance (which allowed Facebook to pay publishers directly), a guaranteed match rate and malware identification for Facebook, and granting Facebook access to proprietary Google data.¹⁵² In other words, through the NBA, Google provided Facebook with advantages that were not available to other auction

¹⁴⁸ “Simplifying programmatic: first price auctions for Google Ad Manager,” Google Blog, March 6, 2019, available at <https://blog.google/products/admanager/simplifying-programmatic-first-price-auctions-google-ad-manager/>, accessed 5/7/2024.

¹⁴⁹ “How Open Bidding Works,” Google Ad Manager, November 20, 2019, available at <https://web.archive.org/web/20191120001210/https://support.google.com/admanager/answer/7128958>, accessed 5/23/2024. Note, this is the earliest available version of this representation on Google’s website that I was able to locate.

¹⁵⁰ See Expert Report of Dr. Joshua Gans, June 7, 2024, Section IX.B. See also GOOG-DOJ-06605325 at -326; [REDACTED].

¹⁵¹ See Expert Report of Dr. Joshua Gans, June 7, 2024, Section IX.B.

¹⁵² See Expert Report of Dr. Joshua Gans, June 7, 2024, Section IX.B.

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participants, and because of the confidentiality of the NBA, such advantages were not disclosed to other participants.¹⁵³ Nevertheless, Google publicly represented that “All participants in the unified auction, including Ad Exchange and third-party exchanges, compete equally for each impression on a net basis.”¹⁵⁴

54. I also understand that, notwithstanding Google’s representation that all auction participants competed equally, Bernanke created an unlevel playing field. Specifically, I understand that under Bernanke, GDN manipulates advertisers’ bids before sending them to AdX and that Bernanke advantages GDN bidders over non-GDN bidders, counter to Google’s representations of equal footing among all auction participants.¹⁵⁵

E. State Deceptive Trade Practice Statutes

55. The Plaintiff States allege that Google engaged in unfair, false, deceptive, and misleading business practices related to their display advertising technology and changes it made to the auctions for web display ads during the period of at least 2013 to the present. Below I summarize the relevant statutes for each of the Plaintiff States, including any factors that each state’s statute deem relevant in determining the amount of civil penalties.

56. **Alaska:** The Alaska Unfair Trade Practices and Consumer Protection Act (“AUTPCPA”) declares unfair or deceptive acts or practices in the conduct of trade or commerce unlawful.¹⁵⁶ The State of Alaska alleges that Google has violated the AUTPCPA, specifically by "engaging in any other conduct creating a likelihood of confusion or of misunderstanding and that

¹⁵³ See Expert Report of Dr. Joshua Gans, June 7, 2024, Section IX.B.

¹⁵⁴ "How Open Bidding Works," Google Ad Manager, November 20, 2019, available at <https://web.archive.org/web/20191120001210/https://support.google.com/admanager/answer/7128958>, accessed 5/23/2024. Note, this is the earliest available version of this representation on Google’s website that I was able to locate.

¹⁵⁵ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.A, Section 8.B, Section 8.G.

¹⁵⁶ Alaska Unfair Trade Practices and Consumer Protection Act 45.50.471(a), available at <https://www.akleg.gov/basis/statutes.asp#45.50.561>, accessed 4/3/2024.

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misleads, deceives, or damages a buyer or a competitor in connection with the sale or advertisement of goods or services" and "using or employing deception, fraud, false pretense, false promise, misrepresentation, or knowingly concealing, suppressing, or omitting a material fact with intent that others rely upon the concealment, suppression, or omission in connection with the sale or advertisement of goods or services whether or not a person has in fact been misled, deceived, or damaged."¹⁵⁷ The AUTPCPA allows for a civil penalty of between \$1,000 and \$25,000 per violation.¹⁵⁸

57. **Arkansas:** The Arkansas Deceptive Trade Practices Act makes unlawful and prohibits deceptive and unconscionable trade practices.¹⁵⁹ Arkansas alleges that Google has violated the Arkansas Deceptive Trade Practices Act.¹⁶⁰ The Arkansas Deceptive Trade Practices Act allows for a penalty of up to \$10,000 to be paid to the state for each violation.¹⁶¹

58. **Florida:** The Florida Deceptive and Unfair Trade Practices Act outlaws any "unfair methods of competition, unconscionable acts or practices, and unfair or deceptive acts or practices in the conduct of any trade or commerce."¹⁶² Florida alleges that Google's actions in relation to AdTech violate the Florida Deceptive and Unfair Trade Practices Act and are "immoral, unethical, oppressive, unscrupulous, or substantially injurious" to Florida consumers.¹⁶³ The Florida

¹⁵⁷ Complaint at ¶681; Alaska Unfair Trade Practices and Consumer Protection Act 45.50.471(b)(11-12), available at <https://www.akleg.gov/basis/statutes.asp#45.50.561>, accessed 4/3/2024.

¹⁵⁸ Alaska Unfair Trade Practices and Consumer Protection Act 45.50.551(b), available at <https://www.akleg.gov/basis/statutes.asp#45.50.561>, accessed 4/3/2024.

¹⁵⁹ Arkansas Code § 4-88-107, available at <https://law.justia.com/codes/arkansas/2020/title-4/subtitle-7/chapter-88/subchapter-1/section-4-88-107/>, accessed 4/3/2024.

¹⁶⁰ Complaint at ¶685.

¹⁶¹ Arkansas Code § 4-88-113, available at <https://law.justia.com/codes/arkansas/2020/title-4/subtitle-7/chapter-88/subchapter-1/section-4-88-113/>, accessed 4/3/2024.

¹⁶² 2023 Florida Statutes 501.204, available at http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0500-0599/0501/Sections/0501.204.html, accessed 4/3/2024.

¹⁶³ Complaint at ¶¶687-688.

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Deceptive and Unfair Trade Practices Act calls for a civil penalty not to exceed \$10,000 for each violation.¹⁶⁴

59. **Idaho:** Idaho’s Consumer Protection Act (“ICPA”) and Idaho Rules of Consumer Protection (“ICPR”) prohibit unfair methods of competition and unfair or deceptive actions or practices in the conduct or trade or commerce.¹⁶⁵ The State of Idaho alleges that Google has violated the ICPA and ICPR, including by “representing that goods or services have sponsorship, approval, characteristics, ingredients, uses, benefits, or quantities that they do not have or that a person has a sponsorship, approval, status, affiliation, connection, qualifications, or license that he does not have;” “representing that goods or services are of a particular standard, quality, or grade, if they are of another;” “advertising goods or services with the intent not to sell them as advertised;” and “engaging in any act or practice that is otherwise misleading, false, or deceptive to consumers, such as making any claim or representation, or omitting any material or relevant fact, concerning goods or services that directly, or by implication, has the capacity, tendency, or effect of deceiving or misleading a consumer acting reasonably under the circumstances.”¹⁶⁶ The ICPA allows for a civil penalty up to \$5,000 per violation.¹⁶⁷

¹⁶⁴ 2023 Florida Statutes 501.2075, available at http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0500-0599/0501/Sections/0501.2075.html, accessed 4/3/2024. I understand that, while Florida’s statute does not include specific factors, Florida courts have stated that certain factors may be “persuasive,” including “the degree of culpability, history of prior such conduct, ability to pay, effect on ability to pay, effect on the ability to continue to do business, and such other matters as justice may require.” See *Office Of The Att’y Gen., State Of Florida, Dep’t Of Legal Affairs v. All USA Van Lines Inc.*, No. CACE18029679, ¶ 101 (Fla. 17th Cir. Ct. May 20, 2022).

¹⁶⁵ Idaho Consumer Protection Act, available at <https://legislature.idaho.gov/statutesrules/idstat/title48/t48ch6/>, accessed 3/12/2024; Idaho Rules of Consumer Protection, available at <https://adminrules.idaho.gov/rules/current/04/040201.pdf>, accessed 3/12/2024.

¹⁶⁶ Complaint at ¶¶690-696.

¹⁶⁷ Idaho Consumer Protection Act, available at <https://legislature.idaho.gov/statutesrules/idstat/title48/t48ch6/>, accessed 3/12/2024.

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60. **Indiana:** The Indiana Deceptive Consumer Sales Act deems unfair, abusive, or deceptive acts, omissions, or practices in connection with a consumer transaction to be unlawful.¹⁶⁸ The State of Indiana alleges that Google has knowingly committed acts, omissions, or practices in violation of the state's Deceptive Consumer Sales Act.¹⁶⁹ The Deceptive Consumer Sales Act allows for penalties not exceeding \$5,000 per violation.¹⁷⁰

61. **Kentucky:** Kentucky Revised Statutes ("KRS") Chapter 367 declares unlawful "unfair, false, misleading, or deceptive acts or practices in the conduct of any trade or commerce."¹⁷¹ The Commonwealth of Kentucky alleges that Google has willfully engaged in and is willfully engaging in unlawful conduct in the course of trade or commerce, in violation of KRS Chapter 367..¹⁷² KRS Chapter 367 allows for the Attorney General to recover a civil penalty not to exceed \$2,000 per violation.¹⁷³

62. **Louisiana:** The Louisiana Unfair Trade Practices and Consumer Protection Law ("LUTPA") deems unfair methods of competition and unfair or deceptive acts or practices in the conduct of any trade or commerce to be unlawful.¹⁷⁴ The State of Louisiana alleges that Google's alleged misconduct constitute a pattern of unfair and deceptive trade practices in violation of

¹⁶⁸ Indiana Deceptive Consumer Sales Act, available at <https://law.justia.com/codes/indiana/2022/title-24/article-5/chapter-0-5/section-24-5-0-5-3/>, accessed 3/12/2024.

¹⁶⁹ Complaint at ¶¶697-703.

¹⁷⁰ Indiana Deceptive Consumer Sales Act, available at <https://law.justia.com/codes/indiana/2022/title-24/article-5/chapter-0-5/section-24-5-0-5-3/>, accessed 3/12/2024.

¹⁷¹ Kentucky Revised Statutes 367.170, available at <https://apps.legislature.ky.gov/law/statutes/statute.aspx?id=34914>, accessed 4/3/2024.

¹⁷² Complaint at ¶¶706-708.

¹⁷³ Kentucky Revised Statutes 367.990, available at <https://apps.legislature.ky.gov/law/statutes/statute.aspx?id=48888>, accessed 4/3/2024.

¹⁷⁴ Louisiana Unfair Trade Practices and Consumer Protection Law, available at <https://legis.la.gov/Legis/Law.aspx?d=104031>, accessed 3/12/2024.

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LUTPA.¹⁷⁵ For any method, act, or practice entered into with the intent to defraud, LUTPA allows for penalties not exceeding \$5,000 per violation.¹⁷⁶

63. **Mississippi:** The Mississippi Consumer Protection Act declares unlawful unfair methods of competition and unfair or deceptive trade practices or acts in the conduct of any trade or commerce.¹⁷⁷ The State of Mississippi alleges that Google’s alleged misconduct was unfair and deceptive to the consumers of Mississippi and thus violates the Consumer Protection Act.¹⁷⁸ Mississippi’s Consumer Protection Act allows for penalties not exceeding \$10,000 per violation.¹⁷⁹

64. **Missouri:** Missouri’s Merchandising Practices Act prohibits “deception, fraud, false pretense, false promise, misrepresentation, unfair practice or the concealment, suppression, or omission of any material fact in connection with the sale or advertisement of any merchandise in trade or commerce...”¹⁸⁰ The State of Missouri alleges that Google’s alleged misconduct “were and are unfair and deceptive practices in violation of Missouri’s Merchandising Practices Act.”¹⁸¹ Missouri’s Merchandising Practices Act allows for a civil penalty not to exceed \$1,000 per violation to be paid to the state.¹⁸²

¹⁷⁵ Complaint at ¶¶711-718.

¹⁷⁶ Louisiana Unfair Trade Practices and Consumer Protection Law, available at <https://legis.la.gov/Legis/Law.aspx?d=104031>, accessed 3/12/2024.

¹⁷⁷ Mississippi Consumer Protection Act, available at <https://law.justia.com/codes/mississippi/2020/title-75/chapter-24/subchapter-generalprovisions/section-75-24-19/>, accessed 3/12/2024.

¹⁷⁸ Complaint at ¶¶719-721.

¹⁷⁹ Mississippi Consumer Protection Act, available at <https://law.justia.com/codes/mississippi/2020/title-75/chapter-24/subchapter-generalprovisions/section-75-24-19/>, accessed 3/12/2024.

¹⁸⁰ Missouri Statute 407.020, available at <https://revisor.mo.gov/main/OneSection.aspx?section=407.020&bid=48371>, accessed 4/3/2024. The Missouri statute does not include factors to consider in assessing a penalty; however, in one case a lower court’s decision was affirmed, with the deciding court stating that penalties were “appropriate in view of the magnitude and seriousness of the violations ... the lack of a bona fide error, and the need to deter.” *See State ex rel. Nixon v. Consumer Auto. Res., Inc.*, 882 S.W.2d 717, 722 (Mo. Ct. App. 1994).

¹⁸¹ Complaint at ¶¶722-723.

¹⁸² Missouri Statute 407.100, available at <https://revisor.mo.gov/main/OneSection.aspx?section=407.100&bid=23016>, accessed 4/3/2024.

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65. **Montana:** The Montana Unfair Trade Practices and Consumer Protection Act outlaws “unfair methods of competition and unfair or deceptive acts or practices in the conduct of any trade or commerce.”¹⁸³ The State of Montana alleges that Google’s alleged misconduct was and is a willful violation of Montana’s Unfair Trade Practices and Consumer Protection Act.¹⁸⁴ The Montana Unfair Trade Practices and Consumer Protection Act allows for the state to fine a violator a fee not to exceed \$10,000 per violation.¹⁸⁵

66. **Nevada:** The Nevada Deceptive Trade Practices Act outlaws numerous acts defined as “deceptive trade practice(s).”¹⁸⁶ The State of Nevada claims that Google’s alleged conduct violates the Nevada Deceptive Trade Practices Act by willfully engaging in a deceptive trade practice by “knowingly mak[ing] a false representation as to the characteristics, ingredients, uses, benefits, alterations or quantities of goods or services for sale or lease or a false representation as to the sponsorship, approval, status, affiliation or connection of a person therewith;” engaging in a deceptive trade practice by “represent[ing] that goods or services for sale or lease are of a particular standard, quality or grade, or that such goods are of a particular style or model, if he or

¹⁸³ Montana Code Annotated 30-14-103, available at https://leg.mt.gov/bills/mca/title_0300/chapter_0140/part_0010/section_0030/0300-0140-0010-0030.html, accessed 4/3/2024. I understand that the Montana statute is based on the Federal Trade Commission Act (“FTCA”) and directs courts to consider FTC and federal court interpretations of the FTCA when considering the Montana statute. *See* Montana Annotated Code 30-14-104, available at https://leg.mt.gov/bills/mca/title_0300/chapter_0140/part_0010/section_0040/0300-0140-0010-0040.html, accessed 5/30/2024. Federal courts have identified factors to consider when assessing fines under the FTCA including the good faith or bad faith of the defendants, the injury to the public, the defendants’ ability to pay and the extent to which defendants have benefited from the violations, whether continuing violations have a detrimental effect on the public, whether defendant can eliminate the effects of the violation if it were motivated to do so, and the penalties awards must result in effective deterrence lest potential violators “regard the statutory penalty ‘as nothing more than an acceptable cost of violation.’” *See United States v. Phelps Dodge Indus., Inc.*, 589 F. Supp. 1340, 1362 (S.D.N.Y. 1984).

¹⁸⁴ Complaint at ¶¶724-725; *See also, Rohrer v. Knudson*, 203 P.3d 759 (Mont. 2009) where the Montana Supreme Court determined “an unfair act or practice is one which offends established public policy and which is either immoral, unethical, oppressive, or unscrupulous.”

¹⁸⁵ Montana Code Annotated 30-14-142, available at https://leg.mt.gov/bills/mca/title_0300/chapter_0140/part_0010/section_0420/0300-0140-0010-0420.html, accessed 4/3/2024.

¹⁸⁶ Nevada Revised Statutes 598.0915-598.0925, available at <https://www.leg.state.nv.us/nrs/NRS-598.html#NRS598Sec0999>, accessed 4/3/2024.

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she knows or should know that they are of another standard, quality, grade, style or model.;" engaging in a deceptive trade practice by "advertis[ing] goods or services with the intent not to sell them as advertised;" engaging in a deceptive trade practice by "knowingly misrepresent[ing] the legal rights, obligations or remedies of a party to a transaction; and" "fails to disclose a material fact in connection with the sale of goods or services."¹⁸⁷ Under the Nevada Deceptive Trade Practices Act, an entity that has willfully engaged in a deceptive trade practice may be fined up to \$15,000 for each violation.¹⁸⁸

67. **North Dakota:** The North Dakota Century Code ("N.D.C.C.") deems unlawful "the act, use, or employment by any person of any deceptive act or practice, fraud, false pretense, false promise, or misrepresentation, with the intent that others rely thereon in connection with the sale or advertisement of any merchandise, whether or not any person has in fact been misled, deceived, or damaged thereby." The N.D.C.C. also defines as unlawful the "use, or employment by any person of any act or practice, in connection with the sale or advertisement of any merchandise, which is unconscionable, or which causes or is likely to cause substantial injury to a person which is not reasonably avoidable by the injured person and not outweighed by countervailing benefits to consumers or to competition."¹⁸⁹ The State of North Dakota alleges that

¹⁸⁷ Complaint at ¶¶729-730; Nevada Revised Statutes 598.0915(5,7,9), 598.092(8), 598.0923(2), available at <https://www.leg.state.nv.us/nrs/NRS-598.html#NRS598Sec0999>, accessed 4/3/2024.

¹⁸⁸ I understand that in July 2023, Nevada's statute was revised to increase maximum penalties per violation from \$5,000 to \$15,000, but that the new version of the statute is not yet available online. I further understand that the increased penalty is the appropriate maximum to apply in this matter. *See* unrevised statute at Nevada Revised Statutes 598.0999, available at <https://www.leg.state.nv.us/nrs/NRS-598.html#NRS598Sec0999>, accessed 4/3/2024.

¹⁸⁹ North Dakota Century Code, available at <https://ndlegis.gov/cencode/t51c15.pdf#nameddest=51-15-11>, accessed 3/12/2024.

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Google has and continues to engage in unlawful practices in violation of the N.D.C.C.¹⁹⁰ The N.D.C.C. allows for penalties of not more than \$5,000 per violation.¹⁹¹

68. **Puerto Rico:** The Puerto Rico Antitrust Act declares “unfair methods of competition, and unfair or deceptive acts or practices in trade or commerce” to be unlawful.¹⁹² The Commonwealth of Puerto Rico claims that Google’s alleged behavior was unfair and deceptive to its consumers and thus violates the Puerto Rico Antitrust Act.¹⁹³ An entity found to have violated the Puerto Rico Antitrust Act may receive a penalty of up to \$5,000 per violation.¹⁹⁴

69. **South Carolina:** The South Carolina Unfair Trade Practices Act (“SCUTPA”) declares unlawful unfair methods of competition and unfair or deceptive acts or practices in the conduct of any trade or commerce.¹⁹⁵ The State of South Carolina alleges that Google’s alleged misconduct are “are offensive to established public policy, immoral, unethical, or oppressive” and that Google willfully violated SCUTPA.¹⁹⁶ For willfully using a method, act or practice declared unlawful by the law, SCUTPA allows for penalties not exceeding \$5,000 per violation.¹⁹⁷

70. There is also case law in South Carolina that provides further guidance on factors to consider when assessing a civil penalty under SCUTPA:

- (a) the degree of culpability and good or bad faith of the defendant;
- (b) the duration of the defendant’s unlawful conduct;
- (c) active concealment of information by the defendant;

¹⁹⁰ Complaint at ¶¶732-739.

¹⁹¹ North Dakota Century Code, available at <https://ndlegis.gov/cencode/t51c15.pdf#nameddest=51-15-11>, accessed 3/12/2024.

¹⁹² 10 L.P.R.A. § 259, available at <https://casetext.com/statute/laws-of-puerto-rico/title-ten-commerce/subtitle-1-regulation-of-business-generally/chapter-13-monopolies-and-restraint-of-trade/259-fair-competition>, accessed 4/3/2024.

¹⁹³ Complaint at ¶741.

¹⁹⁴ P.R. Laws tit. 10, § 259(i)

¹⁹⁵ South Carolina Unfair Trade Practices Act, available at <https://www.scstatehouse.gov/code/t39c005.php>, accessed 3/12/2024.

¹⁹⁶ Complaint at ¶¶744-751.

¹⁹⁷ South Carolina Unfair Trade Practices Act, available at <https://www.scstatehouse.gov/code/t39c005.php>, accessed 3/12/2024.

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- (d) defendant's awareness of the unfair or deceptive nature of their conduct;
- (e) prior similar conduct by the defendant;
- (f) the defendant's ability to pay;
- (g) the deterrence value of the assessed penalties;
- (h) the actual impact or injury to the public resulting from defendant's unlawful conduct.¹⁹⁸

71. **South Dakota:** South Dakota's Codified Laws ("SDCL") state that for any person to "knowingly act, use, or employ any deceptive act or practice, fraud, false pretense, false promises, or misrepresentation or to conceal, suppress, or omit any material fact in connection with the sale or advertisement of any merchandise, regardless of whether any person has in fact been misled, deceived, or damaged thereby" is an unlawful deceptive act.¹⁹⁹ The State of South Dakota alleges that Google violated the SDCL, causing adverse effects for the businesses of the state and causing damage to the person of the state.²⁰⁰ For intentional unlawful acts, the SDCL allows for penalties of not more than \$2,000 per violation.²⁰¹

72. **Texas:** Section 17.47 of Texas' Deceptive Trade Practices Act ("DTPA") gives the Office of the Attorney General the authority to bring an action "[w]henver the consumer protection division has reason to believe that any person is engaging in, has engaged in, or is about to engage in any act or practice declared to be unlawful by" the DTPA.²⁰² Under the DTPA, false, misleading, or deceptive acts or practices in the conduct of any trade or commerce are deemed

¹⁹⁸ *State ex rel. Wilson v. Ortho-McNeil-Janssen Pharm., Inc.*, 777 S.E.2d 176, 203 (S.C. 2015). The opinion also states that "we further authorize our able trial judges to consider any other factors they deem appropriate under the circumstances."

¹⁹⁹ South Dakota Codified Laws, available at <https://sdlegislature.gov/Statutes/37-24>, accessed 3/12/2024.

²⁰⁰ Complaint at ¶¶752-754.

²⁰¹ South Dakota Codified Laws, available at <https://sdlegislature.gov/Statutes/37-24>, accessed 3/12/2024.

²⁰² Section 17.44 of Texas' DTPA provides that it "shall be liberally construed and applied to promote its underlying purposes, which are to protect consumers against false, misleading, and deceptive business practices, unconscionable actions, and breaches of warranty and to provide efficient and economical procedures to secure such protection." See Texas Deceptive Trade Practices Act, available at <https://statutes.capitol.texas.gov/Docs/BC/htm/BC.17.htm>, accessed 3/12/2024.

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unlawful and subject to action by the Consumer Protection Division of the Office of the Attorney General.²⁰³ I understand that a “false, misleading, or deceptive act or practice” means any act or series of acts that have the tendency to deceive an average ordinary person, even though that person may have been ignorant, unthinking, or credulous.²⁰⁴ In addition, false, misleading, or deceptive acts and practices under the DTPA include but are not limited to “representing that services have sponsorship, approval, characteristics, ingredients, uses, benefits, or quantities which they do not have or that a person has a sponsorship, approval, status, affiliation, or connection which he does not have;” “representing that services are of a particular standard, quality, or grade, if they are of another;” “advertising goods or services with the intent not to sell them as advertised;” “representing that an agreement confers or involves rights, remedies, or obligations which it does not have or involve, or which are prohibited by law;” and “failing to disclose information concerning goods or services which was known at the time of the transaction with the intent to induce the consumer into a transaction into which the consumer would not have entered had the information been disclosed.”²⁰⁵

73. In addition to injunctive relief, the Texas DTPA allows for a civil penalty of not more than \$10,000 per violation. The Texas DTPA also provides the following list of factors that the trier of fact shall consider in determining the level of a penalty:

- (1) the seriousness of the violation, including the nature, circumstances, extent, and gravity of any prohibited act or practice;
- (2) the history of previous violations;
- (3) the amount necessary to deter future violations;
- (4) the economic effect on the person against whom the penalty is to be assessed;

²⁰³ Texas Deceptive Trade Practices Act, available at <https://statutes.capitol.texas.gov/Docs/BC/htm/BC.17.htm>, accessed 3/12/2024.

²⁰⁴ *Spradling v. Williams*, 566 S.W.2d 561 (Tex. 1978).

²⁰⁵ Complaint at ¶¶674-678.

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- (5) knowledge of the illegality of the act or practice; and
- (6) any other matter that justice may require.²⁰⁶

74. **Utah:** The Utah Consumer Sales Practices Act outlaws any deceptive act or practice by a supplier in connection with a consumer transaction.²⁰⁷ The State of Utah claims that Google’s alleged conduct “constitute(s) unconscionable and deceptive practices to the consumers of the State of Utah, therefore Google’s conduct violated the Utah Consumer Sales Practices Act...”²⁰⁸ The Utah Consumer Sales Practices Act asks an enforcing authority to consider the following factors to determine the amount of an imposed fine:

- (a) the seriousness, nature, circumstances, extent, and persistence of the conduct constituting the violation;
 - (b) the harm to other persons resulting either directly or indirectly from the violation;
 - (c) cooperation by the supplier in an inquiry or investigation conducted by the enforcing authority concerning the violation;
 - (d) efforts by the supplier to prevent occurrences of the violation;
 - (e) the history of previous violations by the supplier;
 - (f) the need to deter the supplier or other suppliers from committing the violation in the future;
 - (g) other matters as justice may require.²⁰⁹
75. There is no cap on the penalty per violation under Utah’s statute.²¹⁰

76. I have been asked to opine on issues related to determining the appropriate amount of the civil penalty in each state.

²⁰⁶ Texas Deceptive Trade Practices Act, available at <https://statutes.capitol.texas.gov/Docs/BC/htm/BC.17.htm>, accessed 3/12/2024.

²⁰⁷ Utah Consumer Sales Practices Act 13-11-4, available at https://le.utah.gov/xcode/Title13/Chapter11/C13-11_1800010118000101.pdf, accessed 4/3/2024.

²⁰⁸ Complaint at ¶756.

²⁰⁹ Utah Consumer Sales Practices Act 13-11-17(1, 6), available at https://le.utah.gov/xcode/Title13/Chapter11/C13-11_1800010118000101.pdf, accessed 4/3/2024.

²¹⁰ Utah Consumer Sales Practices Act 13-11-17(6), available at https://le.utah.gov/xcode/Title13/Chapter11/C13-11_1800010118000101.pdf, accessed 4/3/2024.

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IV. BASIS OF OPINIONS

**A. Google's Financial Performance from 2013 to Present Has Been Extraordinary:
Google Eclipses All But Three U.S. Companies as Measured by Market Capitalization**

77. Below I provide a summary of Google's financial performance based on the information currently available to me, though I reserve the right to supplement or revise my opinions and conclusions based on updated financial information that becomes available to me up to and during the time of trial. This information is pertinent to my opinion as it establishes Google as highly profitable and successful company during the relevant period and informs the amount necessary to deter Google's misconduct and its ability to pay a penalty related to this misconduct.

**i. Google's Overall Revenue, Operating Profit and Net Income Grew at
a CAGR of Over 18.5 percent From 2013 through 2023**

78. From 2013 through 2023, Google has experienced tremendous growth.²¹¹ Specifically, Google's revenue has grown from \$55.52 billion in 2013 to \$307.39 billion in 2023, a CAGR of 18.7%.²¹² To put this into perspective, the revenue of the average S&P 500 company experienced a 5.0% CAGR over the same period.²¹³ The company attributes its growth to increased user adoption and usage on mobile devices, advertiser spending, and increased YouTube non-advertising and hardware revenues.²¹⁴ In total, Google has grossed approximately \$1.73 trillion in revenues from fiscal year 2013 through fiscal year 2023.²¹⁵ I have provided graphical illustrations Google's revenue growth in **Chart 1** below.

²¹¹ Throughout this report, I use annual income statement data through December 31, 2023, to make comparisons across years and calculate growth rates. I also report Google's Q1 2024 revenues and earnings based on its latest available quarterly filing. Finally, I report balance sheet data as of March 31, 2024, based on Google's latest available quarterly filings. I reserve the right to update my analyses based on updated financial information made available by Google.

²¹² S&P Capital IQ.

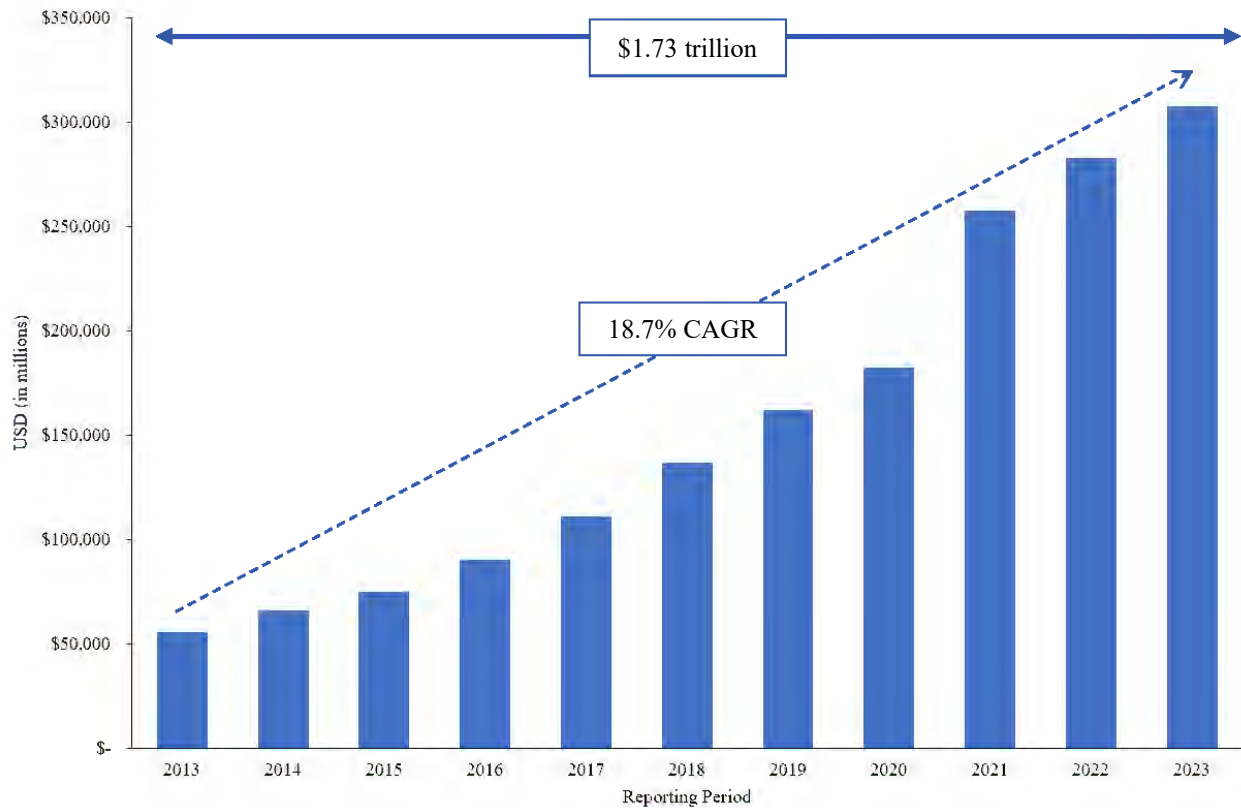
²¹³ S&P Capital IQ.

²¹⁴ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2023, pp. 35-36.

²¹⁵ S&P Capital IQ. Additionally, Google earned \$80.54 billion in revenue during Q1 2024.

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Chart 1²¹⁶
Google's Revenue Growth
2013 –2023



79. Google's revenue growth was also accompanied by growth in profits. Specifically, Google's operating profit has grown from \$15.40 billion in 2013 to \$84.29 billion in 2023, a CAGR of 18.5%.²¹⁷ The operating profit of the average S&P 500 company experienced a 5.6% CAGR over the same period.²¹⁸ Google's operating profit margins during this period ranged between 20.1% and 30.6% percent.²¹⁹ In total, Google earned \$441.98 billion in operating profits between 2013 and 2023.²²⁰ Google's overall operating income growth is depicted in **Chart 2** below.

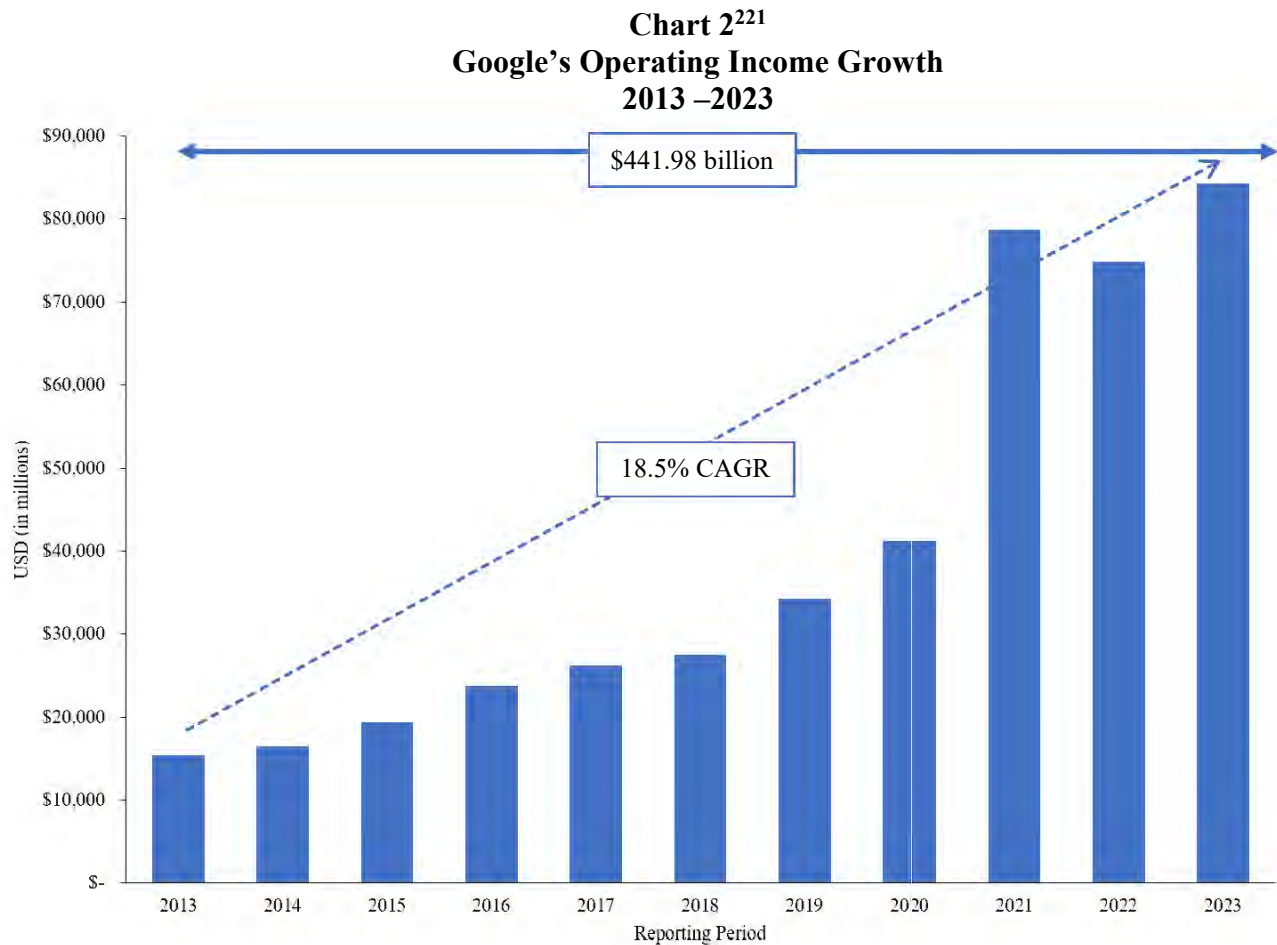
²¹⁶ S&P Capital IQ.

²¹⁷ S&P Capital IQ.

²¹⁸ S&P Capital IQ.

²¹⁹ S&P Capital IQ.

²²⁰ S&P Capital IQ. Additionally, Google earned \$25.47 billion in operating profit during Q1 2024. Alphabet Inc. Form 10-Q for the quarterly period ended March 31, 2024.

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80. Similarly, Google's net income has grown from \$12.73 billion in 2013 to \$73.80 billion in 2023, a 19.2% CAGR.²²² The net income of the average S&P 500 company experienced an 6.7% CAGR over the same period.²²³ Google's net margins during this period ranged between 11.4% and 29.5% percent.²²⁴ In total, Google earned \$390.51 billion in net income between 2013 and 2023.²²⁵ Google's overall net income growth is depicted in **Chart 3** below.

²²¹ S&P Capital IQ.

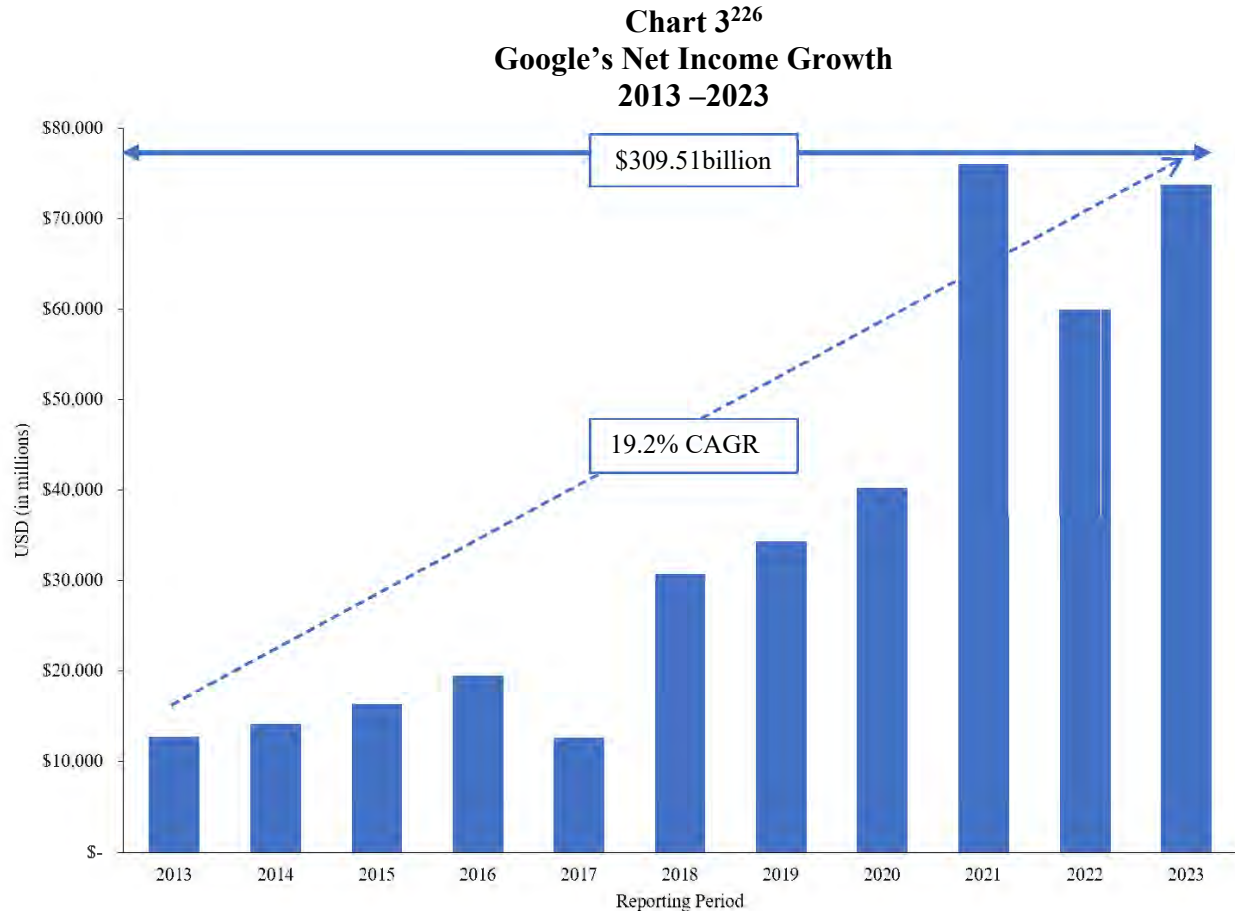
²²² S&P Capital IQ.

²²³ S&P Capital IQ.

²²⁴ S&P Capital IQ.

²²⁵ S&P Capital IQ. Additionally, Google earned \$23.66 billion in net income during Q1 2024.

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ii. Google Held More Than \$108.09 Billion in Cash, Cash Equivalents and Short-Term Investments as of March 31, 2024

81. Google has also increased its cash and equivalents by 29.6% from December 31, 2013 to March 31, 2024.²²⁷ In addition to its cash balances, the company holds short-term marketable securities as its principal sources of liquidity.²²⁸ Google's total cash, cash equivalents and short-term marketable securities balance has grown by over 84.1% from December 31, 2013

²²⁶ S&P Capital IQ. The decrease in net income in 2017 is primarily due to Impacts of the Tax Act. *See* Alphabet Inc, 10-K filed February 6, 2018, p. 80. A decrease in net income in 2022 is primarily due to the 2017 Tax Cuts and Jobs Act, effective January 1, 2022 which required research and development costs to be capitalized and amortized. This resulted in higher cash taxes for 2022. *See* Alphabet Inc, 10-K filed February 3, 2023, p. 81.

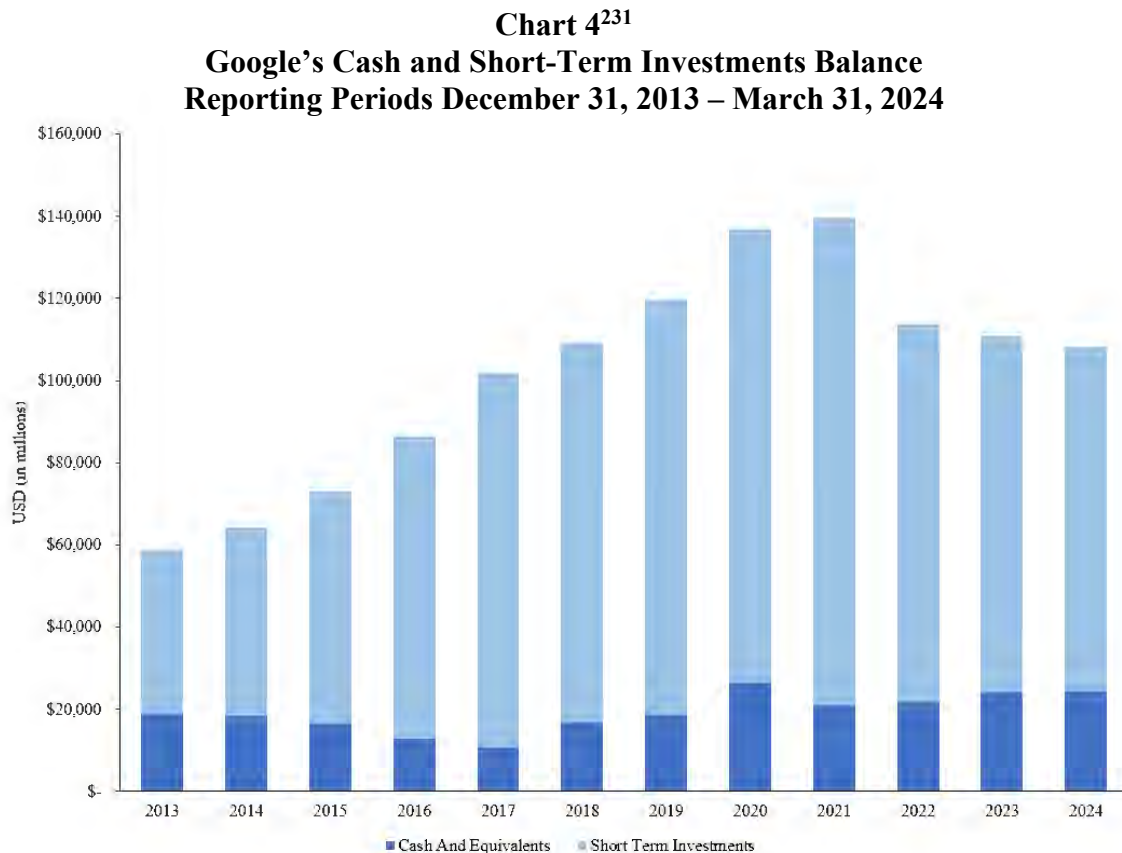
²²⁷ Alphabet Inc. Form 10-Ks for fiscal years 2013-2023; Alphabet Inc. Form 10-Q for the quarterly period ended March 31, 2024; S&P Capital IQ.

²²⁸ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2023, p. 40.

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through March 31, 2024.²²⁹ As of March 31, 2024, this balance reached \$108.09 billion.²³⁰

Google's cash and equivalents and short-term investments growth is illustrated in **Chart 4** below.



iii. Google's Stock Has Outperformed the Market and It Has Grown to be the Fourth Largest U.S. Company by Market Capitalization

82. Unsurprisingly, given its outstanding growth and profitability, Google's stock has outperformed market indices such as the S&P 500 and the Nasdaq Composite. An indication of Google's success is provided by the fact that it has accumulated such a significant amount of cash, cash equivalents and short-term marketable securities that during its 2024 Q1 Earnings Call on

²²⁹ Alphabet Inc. Form 10-Ks for fiscal years ended 2013 – 2023; Alphabet Inc. Form 10-Q for the quarterly period ended March 31, 2024; S&P Capital IQ.

²³⁰ S&P Capital IQ.

²³¹ Alphabet Inc. Form 10-Ks for fiscal years ended 2013 – 2023; Alphabet Inc. Form 10-Q for the quarterly period ended March 31, 2024; S&P Capital IQ.

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April 25, 2024, it announced that it will “be adding a quarterly dividend of \$0.20 per share to [its] capital return program as well as a new \$70 billion authorization in share repurchases.”²³² The market reacted positively to this news as the company’s Class A shares rose by 10.2%, the largest single-day gain since 2015.²³³ Google’s market cap increased from \$1.95 trillion to \$2.14 trillion, making it just one of four U.S. companies with a market cap of over \$2 trillion.²³⁴

83. Google’s stock price has grown from approximately \$18.08 per share as of January 2, 2013 to \$173.17 per share as on June 3, 2024 a few days prior to this report’s issuance, which represents a cumulative growth of 857.73% and an annual return of nearly 22%.²³⁵ This is 3.28 times the growth of the S&P 500 and 1.95 times the growth of the Nasdaq Composite over the same period.²³⁶ This comparative growth is illustrated graphically in **Chart 5**.

²³² Alphabet Inc., Q1 2024 Earnings Call, April 25, 2024.

²³³ Bloomberg.

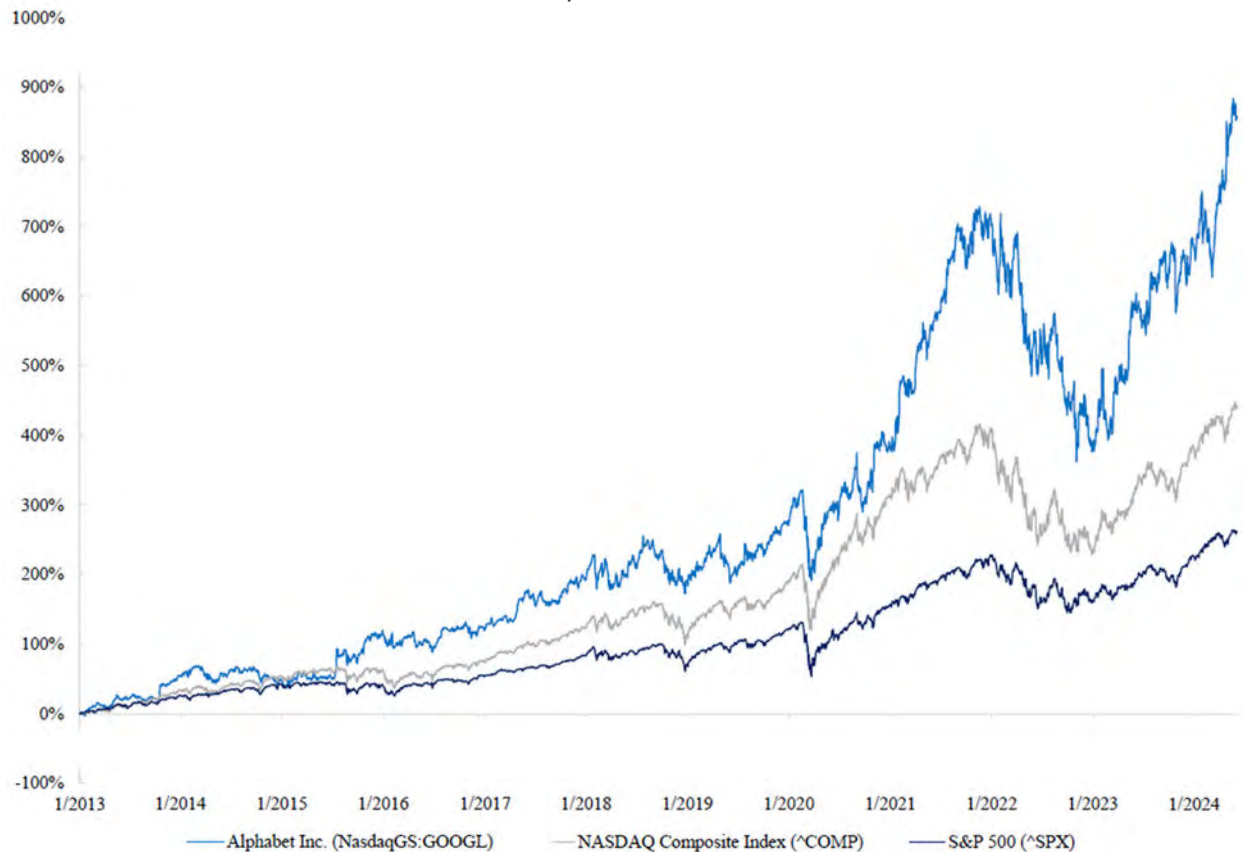
²³⁴ Bloomberg; S&P Capital IQ.

²³⁵ Based on closing stock price is as of June 3, 2024 per S&P Capital IQ.

²³⁶ The S&P 500 (SPX) and the Nasdaq Composite (COMP) have grown 261.28% and 440.72% respectively since the first trading day of 2013. S&P Capital IQ.

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Chart 5²³⁷
Google's Stock Performance Relative to S&P 500 and Nasdaq Composite Indices
January 2, 2013 – June 3, 2024



84. Google has also become one of the world's largest companies by market capitalization.²³⁸ Currently valued at \$2.15 trillion, Google is the fourth largest company by market capitalization in the world.²³⁹ In fact, it is one of only seven companies worldwide with a market capitalization of over \$1 trillion.²⁴⁰ See **Chart 6** below.

²³⁷ S&P Capital IQ.

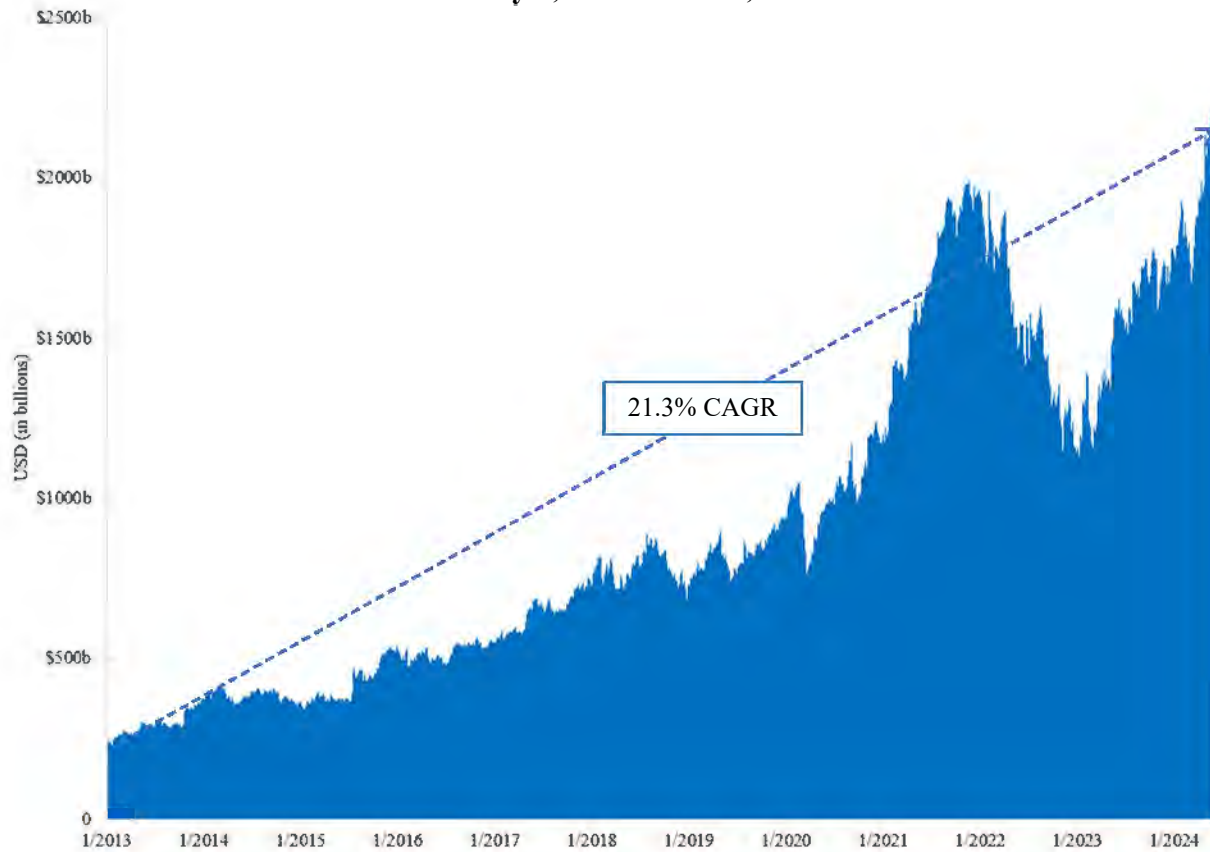
²³⁸ Market capitalization measures the market value of the firm's equity, and it is calculated as the company's common shares outstanding multiplied by the price per share. See Berk and DeMarzo, *Corporate Finance*, 3rd Edition, p. 27.

²³⁹ S&P Capital IQ.

²⁴⁰ S&P Capital IQ.

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Chart 6²⁴¹
Google's Market Capitalization Growth
January 2, 2013– June 3, 2024



85. **Chart 7** puts Google's size into context. It is now the fourth largest company in the world as measured by market capitalization. Google alone has a larger market capitalization than ExxonMobil, Walmart, Coca-Cola, Nike, AT&T, Disney, Dell, Caterpillar and American Express combined.²⁴²

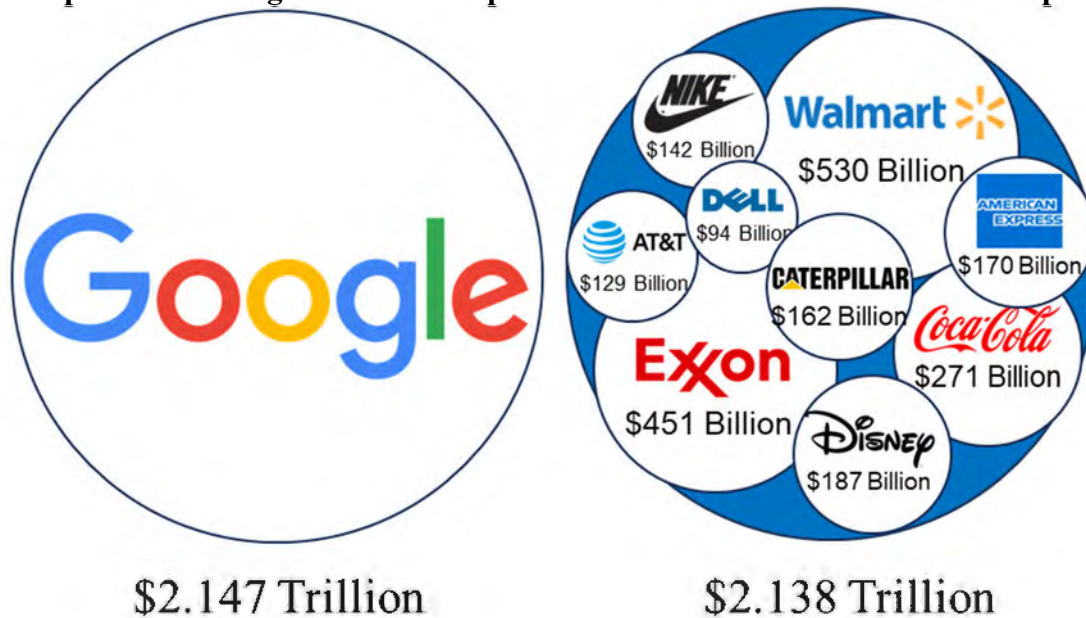
²⁴¹ S&P Capital IQ.

²⁴² S&P Capital IQ.

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Chart 7²⁴³

Comparison of Google's Market Capitalization to Several Well-Known Companies



Note: Market Cap as of 6/3/2024.
Source: S&P Capital IQ.

B. Google's Growth and Profitability During the Relevant Period Have Been Driven by Advertising

86. Google's financial reports demonstrate that its success is driven primarily by advertising.²⁴⁴ Google's advertising revenue in 2013 was \$51.07 billion, approximately 92 percent of its overall revenue.²⁴⁵ By 2023, Google's advertising revenue grew to \$237.86 billion or 77 percent of its overall revenue, which represents a 16.6% CAGR.²⁴⁶ Although Google's advertising revenue as a percentage of its overall revenue has been declining over time as Google diversifies into other businesses, Google derives most if not all of its profits each year from advertising.

²⁴³ S&P Capital IQ.

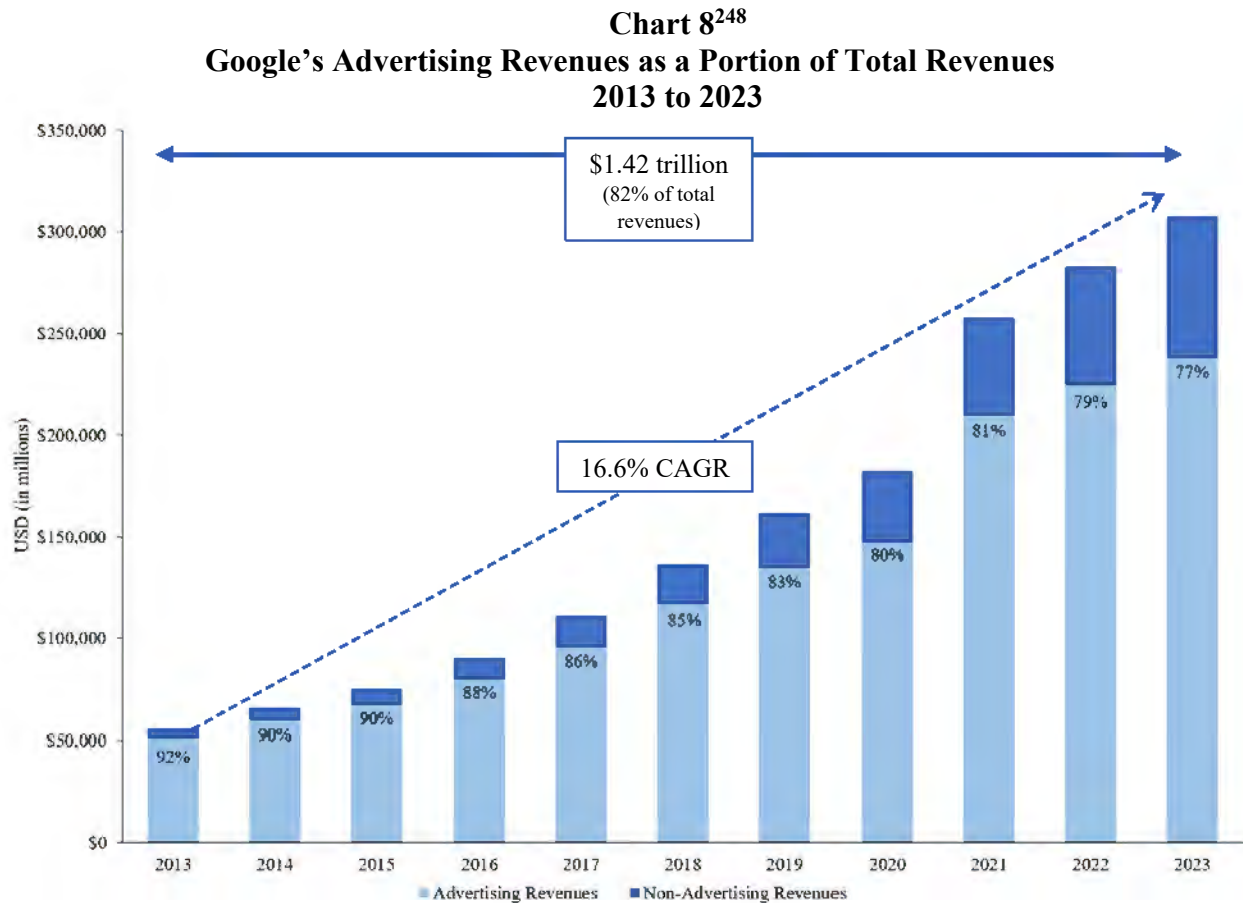
²⁴⁴ See also "How We Make Money with Advertising, Google, available at <https://howwemakemoney.withgoogle.com/>, accessed 1/10/2024 ("Google's main source of revenue is advertising.")

²⁴⁵ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2015 pp. 24-25.; S&P Capital IQ.

²⁴⁶ Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2015 pp. 24-25; Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2023 pp. 35-36; S&P Capital IQ.

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Overall, from 2013 through 2023, advertising revenue comprised \$1.42 trillion (or 82 percent) of Google's total revenues of \$1.73 trillion.²⁴⁷ Google's reliance on advertising revenue is illustrated below in **Chart 8**.



87. Google does not report its profits from advertising in its SEC filings and has also not produced that information in this litigation. However, I have estimated Google's advertising operating profit based upon the business segment information contained in Google's SEC filings. Google's SEC filings for 2020 through 2023 report the results of its advertising operations under the Google Services segment, including results going back to 2018.²⁴⁹ Accordingly, for 2018

²⁴⁷ Alphabet Inc. Form 10-Ks for fiscal years ended 2015 - 2023; S&P Capital IQ. Additionally, Google earned \$61.66 billion in advertising revenue during Q1 2024, which comprises 77% of its total revenue of \$80.54 billion in the same quarter. Alphabet Inc. Form 10-Q for the quarterly period ended March 31, 2024.

²⁴⁸ Alphabet Inc. Form 10-Ks for fiscal years ended 2015 - 2023; S&P Capital IQ.

²⁴⁹ S&P Capital IQ.

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through 2023, I estimated Google’s operating profit from advertising by applying operating profit margins of the Google Services segments to Google’s advertising revenue. Google’s SEC filings for 2012 through 2017 report the results of its advertising operations under the “Google” segment.²⁵⁰ Accordingly, for 2013 through 2017, I estimated Google’s operating profit from advertising by applying operating profit margins of the “Google” segment to Google’s advertising revenue.

88. [REDACTED]

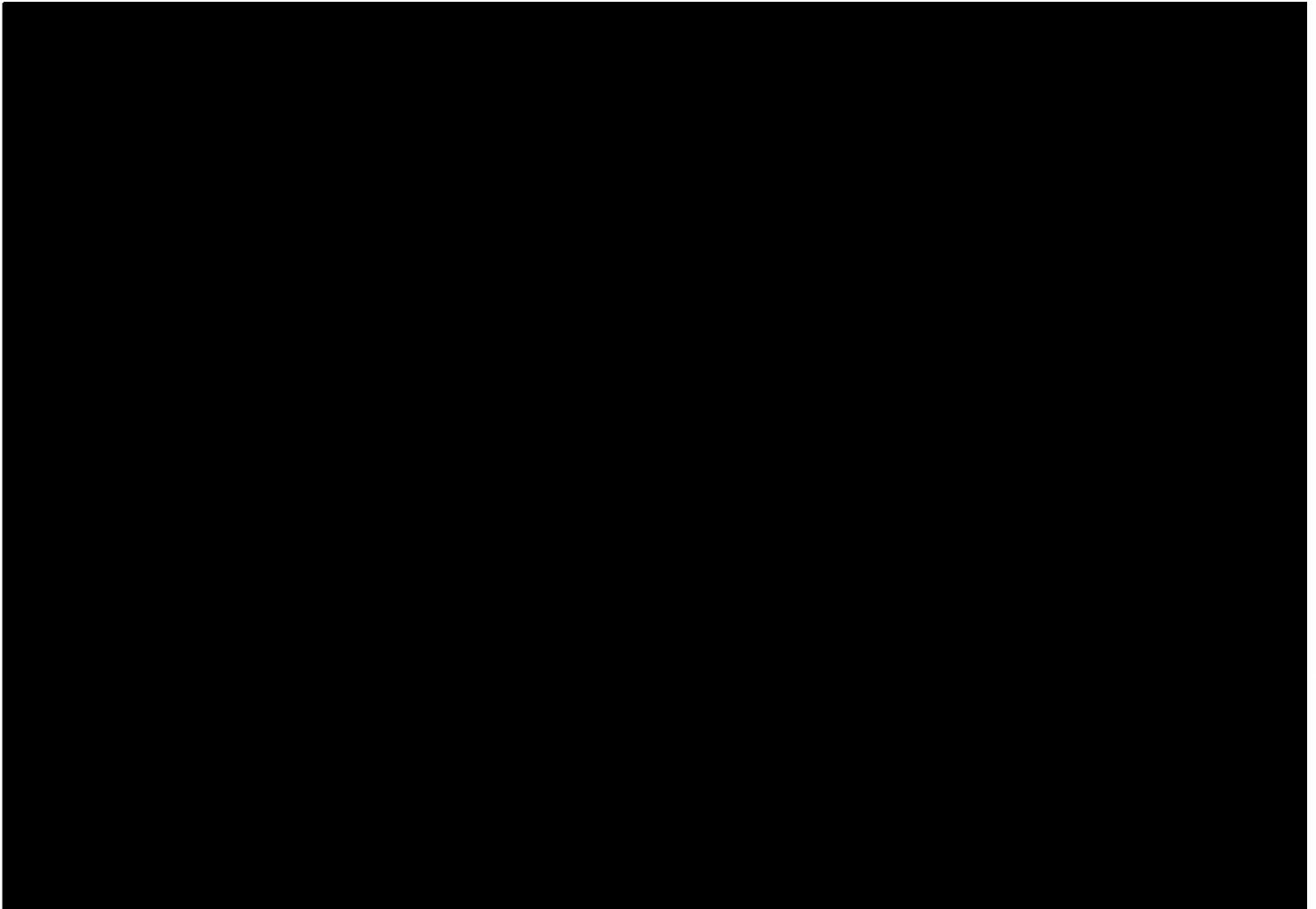
[REDACTED]

[REDACTED]

[REDACTED]

²⁵⁰ S&P Capital IQ

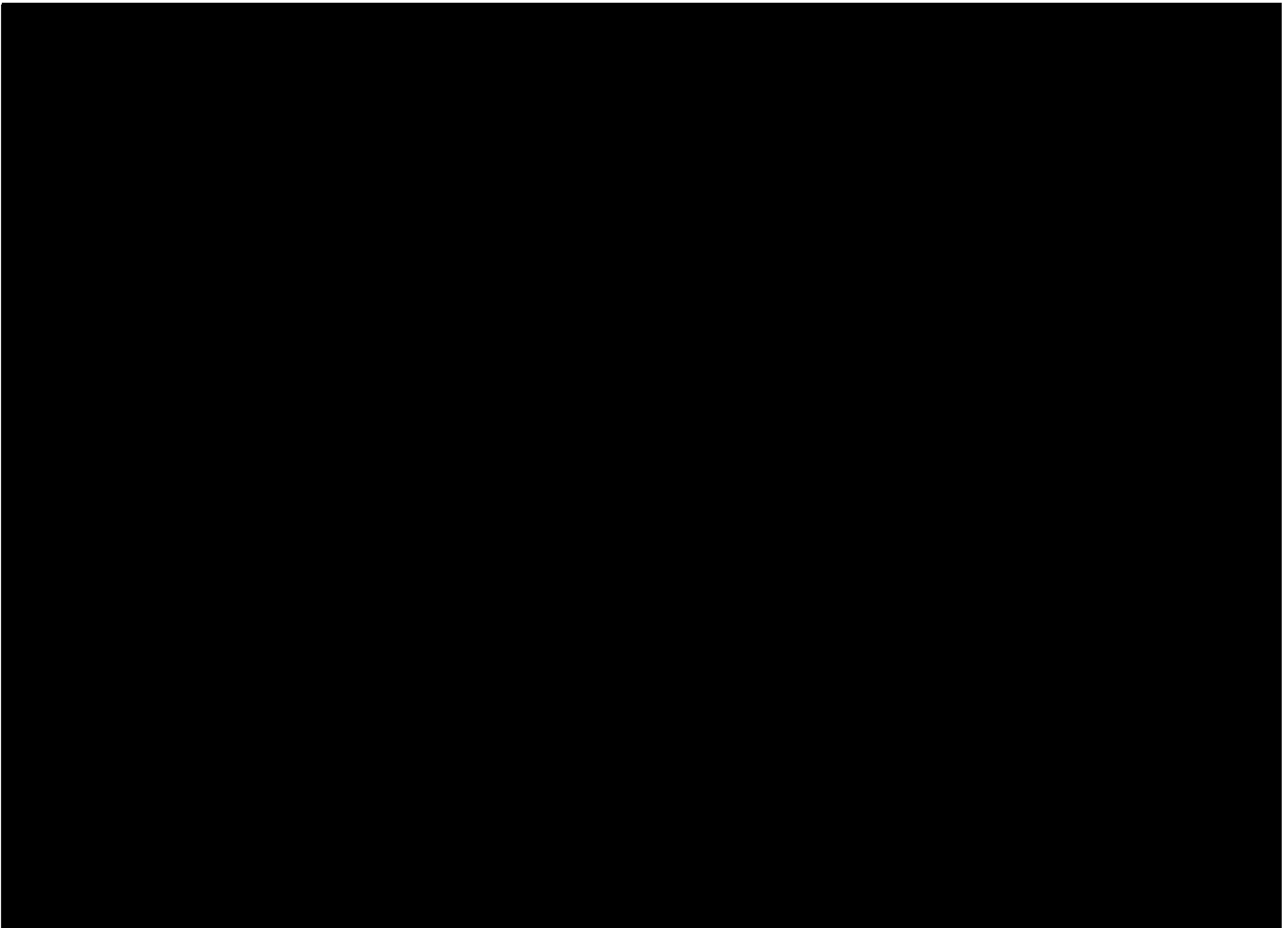
²⁵¹ Alphabet Inc. Form 10-Ks for fiscal years ended 2012 – 2023; S&P Capital IQ. Additionally, Google earned \$24.43 billion in operating profits in advertising during Q1 2024. Alphabet Inc. Form 10-Q for the quarterly period ending March 31, 2024.

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89. **Chart 10** shows Google's advertising operating profit as a percentage of its total operating profit each year.

²⁵² Alphabet Inc. Form 10-Ks for fiscal years ended 2013 – 2023; S&P Capital IQ.

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90. As can be seen in **Chart 10**, for most years reported above, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**C. Google Earned Operating Profits From Display Advertising in the Plaintiff States
Between 2013 and 2023**

91. Based on Google's verified discovery responses, Google has not identified the state of residence, organization or incorporation of any of its customers and has not otherwise produced,

²⁵³ Alphabet Inc. Form 10-Ks for fiscal years ended 2013 – 2023; S&P Capital IQ.

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among other relevant requested data, revenue and profit specific to the Plaintiff States in this matter.²⁵⁴ Based on the information currently available at this time, I have estimated the share of Google's display advertising revenue and profit associated with the Plaintiff States using the below described methodology.²⁵⁵ This method is reliable as it is based on financial data as produced and/or publicly reported by Google, as well as data produced by the U.S. Census Bureau, a common source of demographic data. The proxies I use below are reasonable based on my financial and economic experience, education, and training.

92. To determine the revenue and profits related to Google's display advertising segment, I rely on internal [REDACTED] ("P&Ls") as produced by Google.²⁵⁶ I understand that [REDACTED]

[REDACTED]
[REDACTED].²⁵⁷ In order to isolate the revenue and profit associated with the display advertising products at issue in this matter, I only include revenue and profits from the P&Ls related to AdSense for Content, AdX, Doubleclick Bid Manager, AdMob, Doubleclick for Publishers, AdServing, Ad Manager, AwBid, Display & Video 360, Campaign Manager, and

²⁵⁴ See Defendant Google LLC's Responses and Objections to Plaintiffs' Second Set of Interrogatories, April 8, 2024 at 7-10 ("With regard to subpart (b) of Interrogatory 2 [the customer's location(s) and state of residence, organization, or incorporation], [REDACTED]

²⁵⁵ My opinions and conclusions herein are based on the information currently available to me, though I reserve the right to supplement or revise my opinions and conclusions based on updated information that becomes available to me up to and during the time of trial.

²⁵⁶ [REDACTED] Google's SEC filings also include revenue related to Google's display advertising products within the "Google Network" vertical; however, I understand that Google Network also includes revenue for products outside of display advertising, for example AdSense for Search. *See, for example*, Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2017, p. 31. I therefore rely on Google's internal display advertising P&Ls.

²⁵⁷ See GOOG-AT-MDL-004326981 at -994.

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Google Ads, which I understand are the products at issue in this matter.²⁵⁸ The P&Ls available to me in production include information on revenue,²⁵⁹ costs, and operating profit for these various Google display advertising products for the years 2013 to 2022. To extrapolate to the year 2023, I conservatively assume the same revenue, costs, and operating profit in 2023 as there were in 2022, i.e. I assume no growth.

93. To estimate the share of Google’s overall display advertising revenue and profit described above that is attributable to the Plaintiff States, I take two additional steps. First, I estimate Google’s U.S. display advertising revenues and profits by multiplying Google’s annual display advertising revenues and profits from Google’s P&Ls as described above by the percent of its overall revenues attributable to the United States in each respective year as reflected in Google/Alphabet SEC filings.

94. I then estimate display advertising revenue and profit associated with the Plaintiff States. The U.S. Census Bureau collects an assortment of data about the people and economy of the United States, including data on internet use, which it has collected as a part of the American Community Survey (“ACS”) since 2013.²⁶⁰ ACS data is available for the United States as a whole,

²⁵⁸ [REDACTED]

²⁵⁹ [REDACTED]

²⁶⁰ “Why We Ask Questions About Computer and Internet Use,” U.S. Census Bureau, available at <https://www.census.gov/acs/www/about/why-we-ask-each-question/computer/>, accessed 11/13/2023.

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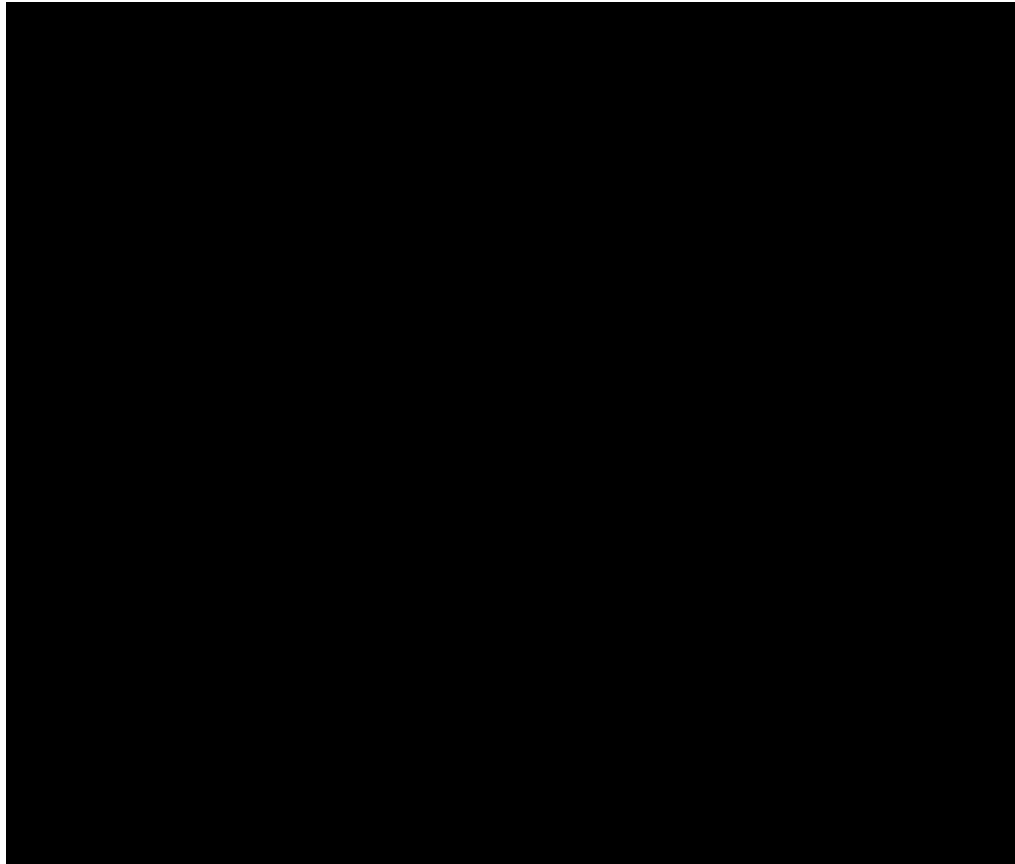
as well as for individual states and smaller geographic areas.²⁶¹ In each year, I take the share of each state's households that have an internet subscription, as provided by the ACS,²⁶² and multiply that share by the population of the state in order to estimate the number of persons in each state that have an internet subscription in each year 2013 through 2022. I then perform the same operation for the United States overall in each year from 2013 through 2022. The U.S. Census Bureau has not yet released 2023 ACS data, thus I assume 2023 figures are equal to 2022 figures. Finally, I use this ratio (each state's persons with internet subscriptions versus all Americans with internet subscriptions) and apply it to Google's U.S. display advertising revenue and profit in each year as described above to estimate Google's display advertising revenue and profit associated with each state for the years 2013 through 2023.

95. **Table 1** below presents the results of the methodology described above for each year from 2013 through 2023.

²⁶¹ American Community Use Survey Information Guide, U.S. Census Bureau, October 2017, available at https://www.census.gov/content/dam/Census/programs-surveys/acs/about/ACS_Information_Guide.pdf, accessed 11/13/2023.

²⁶² The ACS includes two types of estimates – 1-year and 5-year. I use the 1-year estimates in years 2013-2019, and 2021-2022. For 2020, I have used 5-year results as 1-year results were not available due to the disruption of the COVID-19 pandemic. See “Pandemic Impact on 2020 American Community Survey 1-Year Data,” United States Census Bureau, October 27, 2021, available at <https://www.census.gov/newsroom/blogs/random-samplings/2021/10/pandemic-impact-on-2020-acs-1-year-data.html>, accessed 1/10/2024.

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D. I Understand Google Has Committed Numerous Violations of State Deceptive Trade Practice Statutes

96. The Plaintiff States allege that Google has violated the deceptive trade practice statutes of the Plaintiff States through multiple programs aimed at manipulating ad auctions, as well as its related deceptive communications, misrepresentations, and omissions. Below I estimate the number of violations that occurred as a result of the misconduct.²⁶³

97. In order to count violations, I

[REDACTED]

[REDACTED]

²⁶³ I do not include an estimation of violation counts for the Header Bidding claim.

²⁶⁴ [REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Further, I limit my violation count to those violations associated with the Plaintiff States by applying to my counts the ratio of each Plaintiff State's internet population to that of the United States as a whole, the same ratio described in Section IV.C, above.²⁶⁶

98. I have assumed that Google's misconduct indirectly affected all Open Auctions within the assumed period associated with each misconduct.²⁶⁷ While a specific Google program might not have run on each auction during a given period, the misrepresentations of those targeted auctions as second-price auctions, first-price auctions, or that participants were on equal footing in such auctions, and the inability of publishers and advertisers to determine whether and to what

²⁶⁵ [REDACTED]

²⁶⁶ [REDACTED]

²⁶⁷ I have been asked to assume based on Dr. Weinberg's report that all auctions during the period in which RPO, DRSv1, DRSv2, and Bernanke misconducts were active were affected by the claimed misconduct, whether they were directly targeted by the misconduct or not. I further understand that Google represented in 2019 that all participants were on equal footing in AdX auctions; however, this was not true, due to various auction advantages Google gave to Facebook pursuant to the NBA, as well as the impact of First Price Bernanke. *See* Expert Report of Dr. Joshua Gans, June 7, 2024; Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 8.G. These advantages created an uneven playing field in all auctions subsequent to Google's disclosure on its website that: "All participants in the unified auction, including Ad Exchange and third-party exchanges, compete equally for each impression on a net basis." *See* "How Open Bidding Works," Google Ad Manager, November 20, 2019, available at <https://web.archive.org/web/20191120001210/https://support.google.com/admanager/answer/7128958>, accessed 5/23/2024; Expert Report of Dr. Joshua Gans, June 7, 2024.

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extent Google's programs/conduct applied to a given auction caused publishers and advertisers to behave differently than they would have but for Google's misconduct.²⁶⁸

99. **Table 2** below presents a violation count for each of Google's misconducts over the period January 2013 to May 2024 using the methodology for counting violations described above.²⁶⁹ The violation counts presented in the table below are conservative as I have chosen the full launch date of each auction manipulation as the starting date for counting violations instead of any earlier dates of experimentation, even though I understand that such experiments were run in and impacted live auctions.²⁷⁰ For example, for RPO, I use March 31, 2015 as the starting date, which Google represents is the date of full RPO launch.²⁷¹ For DRS, I use August 20, 2015 as the starting date, which Google represents is the date of DRS v1 launch.²⁷² For Bernanke, I use November 11, 2013 as the starting date, which is the date Google represented as the full Bernanke

²⁶⁸ See Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.F, Section 7.G, Section 8.C, Section 9.B; Expert Report of Dr. John Chandler, June 7, 2024, §X.

²⁶⁹

[REDACTED]

Further, as I state in this report, I assume that all Open Auctions were affected by Google's misconduct. However, if the trier of fact determines that these estimates are relevant in determining the number of violations, I reserve the right to adjust my violation counts. To note, lowering violation counts would lead to a lower overall penalty than I recommend here, which may not provide adequate deterrence to Google as required by several state's deceptive trade practice statutes.

²⁷⁰ See Expert Report of Dr. John Chandler, June 7, 2024, §X.G.

²⁷¹ Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6.

²⁷² Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6.

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launch date.²⁷³ For Equal Footing/AdX Fairness, I use November 20, 2019 as the starting date, which is the date of the earliest identified widespread representation by Google regarding auction participants competing equally, though as stated above, Google made such representations before that time.²⁷⁴

100. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]²⁷⁶ Further, I understand the Plaintiff States are claiming that the miscommunication or lack of communication around these experiments, or the complete concealment thereof, was deceptive such that auction participants were unaware of the experiments, which programs Google was experimenting with, or which auctions were affected by Google's experiments.²⁷⁷ Thus, although I limit my violation count to post-full launch auctions, I understand that auctions during the earlier experimental phases of the misconducts were also affected, and as a result could be considered violations as well.²⁷⁸

²⁷³ Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatory No. 6; GOOG-DOJ-28386151 at -165 (December 10, 2013 internal Google presentation titled "Project Bernanke" states "Fully launched on 2013-11-11").

²⁷⁴ "How Open Bidding Works," Google Ad Manager, November 20, 2019, available at <https://web.archive.org/web/20191120001210/https://support.google.com/admanager/answer/7128958>, accessed 5/23/2024 ("All participants in the unified auction, including Ad Exchange and third-party exchanges, compete equally for each impression on a net basis.").

²⁷⁵ [REDACTED]

[REDACTED] See also, Expert Report of Dr. John Chandler, June 7, 2024, §X.G

²⁷⁶ See GOOG-DOJ-15418450; GOOG-AT-MDL-B-001109245; GOOG-DOJ-14265301 at -301-302. See also, Expert Report of Dr. John Chandler, June 7, 2024, §X.G.

²⁷⁷ See Expert Report of Dr. John Chandler, June 7, 2024, §X.C, G.

²⁷⁸ As such, I reserve the right to update my violation counts at a future date if necessary. The data my analysis relies on allows me to adjust the violation count calculation at the monthly level and at the state level. If the trier of fact determines that the period of the misconduct for any claim must be adjusted, my analysis can easily be adapted for such changes. See **Exhibit 3** for monthly counts of Open Auctions related to Plaintiff States by each of the misconducts. See **Exhibit 4** for annual counts of Open Auctions related to Plaintiff States by each of the misconducts by state. Further, I provide Open Auction violation counts related to certain misconduct broken out into

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101. While I provide a violation count of Open Auctions associated with each misconduct in this table, each individual auction should only be counted as one violation. For example, if the trier of fact finds that Google is liable for both RPO and Bernanke, each auction that occurred during the period both misconducts were active should only be counted once as a violation.²⁷⁹

E. Potential Penalties Under State Deceptive Trade Practices Statutes Are Between \$0 and \$25,000 per Violation

102. As I describe in Section III.F above, under each state's deceptive trade practices statute, the trier of fact can assess a range of penalties up to a certain maximum amount per violation. **Table 3** below lists the maximum penalty per violation by state.

subperiods (DRSv1, DRSv2, Second Price Bernanke, and First Price Bernanke) in **Exhibit 5**. See **Exhibit 6** for monthly counts of all auctions ("total queries") related to Plaintiff States should the trier of fact find this relevant.²⁷⁹ I also understand that Nevada's deceptive trade practices statute allows for an additional violation for deceptive conduct in each auction that adversely impacted a Nevada-based consumer, advertiser or publisher and thus conduct related to one auction could be the basis for multiple violations of Nevada's statute. See Nevada Revised Statutes 598.0999, available at <https://www.leg.state.nv.us/nrs/NRS-598.html#NRS598Sec0999>, accessed 4/3/2024; Nevada Revised Statutes 598.0915-598.0925, available at <https://www.leg.state.nv.us/nrs/NRS-598.html#NRS598Sec0999>, accessed 4/3/2024. I conservatively assume that one auction is equivalent to no more than one violation.

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Table 3
Maximum Penalty
State Deceptive Trade Practice Statutes

State/Territory	Maximum Penalty per Violation	State/Territory	Maximum Penalty per Violation
Alaska	\$ 25,000	Montana	\$ 10,000
Arkansas	\$ 10,000	Nevada	\$ 15,000
Florida	\$ 10,000	North Dakota	\$ 5,000
Idaho	\$ 5,000	Puerto Rico	\$ 5,000
Indiana	\$ 5,000	South Carolina	\$ 5,000
Kentucky	\$ 2,000	South Dakota	\$ 2,000
Louisiana	\$ 5,000	Texas	\$ 10,000
Mississippi	\$ 10,000	Utah	Uncapped
Missouri	\$ 1,000		

Sources: Texas Deceptive Trade Practices Act; Alaska Unfair Trade Practices and Consumer Protection Act; Arkansas Deceptive Trade Practices Act; Florida Deceptive and Unfair Trade; Idaho Consumer Protection Act; Idaho Rules of Consumer Protection; Indiana Deceptive Consumer Sales Act; Practices Act; Kentucky Revised Statutes Chapter 367; Louisiana Unfair Trade Practices and Consumer Protection Law; Mississippi Consumer Protection Act; Missouri's Merchandising Practices Act; Montana's Unfair Trade Practices and Consumer Protection Act; Nevada Deceptive Trade Practices Act; North Dakota Century Code; The Puerto Rico Antitrust Act; South Carolina Unfair Trade Practices Act; South Dakota Codified Laws; Utah Consumer Sales Practices Act.

103. In this section, I present the maximum penalty amount related to Google's misconduct based upon the maximum penalty per violation in each Plaintiff State and the maximum number of violations determined in the previous section.²⁸⁰ While this figure represents the maximum potential penalty for the alleged misconducts based upon my analysis, it does not necessarily represent the appropriate penalty in this case, which must be determined based on relevant factors. My understanding is that deterrence of future misconduct, the history of past violations, and the economic impact of the penalty on the offending party are all relevant factors to guide a determination of civil penalties related to the misconduct at issue in this matter, although, as noted above there are other factors also relevant to determining the appropriate penalty amounts.

²⁸⁰ [REDACTED]

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In subsequent sections, I analyze these three factors and present my conclusions on the appropriate penalty per violation based upon my analysis.

104. Using the maximum potential penalty for each Plaintiff State and the maximum violation count related to Google's misconduct as determined in the previous section, I find that the maximum total penalty is [REDACTED]²⁸¹

105. The remainder of my report will put this potential penalty into context and provide the trier of fact with information to assist in their determination of the appropriate penalty per violation in accordance with relevant factors I have analyzed.

F. Amount Necessary to Deter Future Violations

106. From a financial and economic perspective, to deter future violations, the total penalty must eliminate Google's financial incentive to engage in the alleged misconduct. If it remains beneficial for Google to engage in the misconduct after paying a penalty, Google will retain a financial incentive to continue engaging in the misconduct and simply view the penalty as a cost of doing business.²⁸² One way to frame the appropriate amount to deter future bad behavior is to consider an approach that penalizes Google for at least the benefits it gained associated with the alleged misconduct. However, there are three issues to note with this approach.

107. First, while the Plaintiff States' deceptive trade practices statutes have caps on the amount of the penalty per violation, these statutes do not limit the penalty amount to the financial

²⁸¹ Utah's penalty per violation is uncapped. For the purposes of this calculation, I use \$2,500 penalty per violation for Utah, which I understand is the maximum penalty for administrative proceedings in Utah.

²⁸² See also, Carolyn Carter, Consumer Protection in the States: A 50-State Evaluation of Unfair and Deceptive Trade Practices Laws, National Consumer Law Center, March 2018, at p. 30, available at https://www.nclc.org/wp-content/uploads/2022/09/UDAP_rpt.pdf, accessed 6/4/2024. ("In almost all states, the UDAP statute allows the state to ask a court to impose a monetary penalty on a business that has engaged in an unfair or deceptive practice. A substantial civil penalty for initial violations is important because of its deterrent effect. A business that faces no potential penalty beyond returning its ill-gotten gains may be tempted to engage in unfair and deceptive practices. If it is caught, it simply ends up back where it started, but if not caught it keeps its gains. The potential of a civil penalty in addition to restitution helps balance this equation.")

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benefits from the misconduct. Therefore, the penalty amount per violation can exceed the amount of financial benefit generated by the misconduct, as long as the penalty amount is within the penalty cap specified in each Plaintiff State's deceptive trade practices statute. Second, if the defendant may continue to enjoy future benefits from the alleged misconduct, the historical benefits may not capture the total benefit from the misconduct. Limiting the penalty only to historical benefit in such cases would fail to deter future violations because the misconduct would still be beneficial. Third, even a penalty equal to the entire amount of financial benefit from the alleged misconduct may be insufficient to completely eliminate a defendant's financial incentive to engage in future misconduct. This is because if the penalty amount is limited to only the amount of the historical financial benefits associated with the misconduct, the expected value of engaging in future misconduct may still be positive if a defendant perceives that there is a less than 100 percent probability that it will be caught and found liable for future misconduct and/or perceives some other ancillary, indirect, or intangible benefit by engaging in the misconduct.

108. I understand that several statutes allow for trebling damages to establish deterrence of future misconduct.²⁸³ From an economic perspective, trebling damages removes the financial incentive to engage in the misconduct because it allows for the fact that the defendant may continue

²⁸³ Specifically, I understand that U.S. statutes, like the Clayton Act, the Racketeer Influenced and Corrupt Organizations Act ("RICO"), and 35 U.S. Code § 271 (which governs patent infringement claims), require or allow for a trebling of damages under certain circumstances for civil claims in addition to any criminal sanctions that may be applicable. It is recognized that "[t]he purposes of trebling damages is twofold: to compensate plaintiffs for their injury and to *deter future violations*." (emphasis added). See 15 U.S. Code § 15; 18 U.S. Code § 1964; 35 U.S. Code § 284; J. Gregory Sidak, Rethinking Antitrust Damages, 33 STAN. L. REV. 329, 330 (1981), available at https://www.criterioneconomics.com/docs/rethinking_antitrust_damages1.pdf; *Halo Electronics, Inc. v. Pulse Electronics, Inc.* 579 U.S. (2016).; "Congress modeled RICO's treble damage provision, section 1964(c), after the antitrust treble damage provision[...] of the Clayton Act. Congress did this to reflect the necessary remedial scheme that would 'curtail-and eventually. . . eradicate the vast expansion of organized crime's economic power,'" per Judith A. Morse, Treble Damages under RICO: Characterization and Computation, 61 Notre Dame L. Rev. 526 (1986).

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benefitting from the misconduct in the future; and (b) if the defendant engages in future misconduct, the probability that the defendant is found liable is typically less than 100 percent.

109. While I understand that each of Google's misconducts alleged in this matter are deceptive and misleading in their own right and directly benefit Google, collectively, I understand that they also provide Google with certain indirect benefits that may help enable Google to engage in anticompetitive conduct and build and maintain market share across the display advertising industry.²⁸⁴ Below I first describe the direct and indirect benefits from the alleged misconduct, and then quantify estimates of these benefits based on available information.

i. Google Derives Direct and Indirect Benefits from the Alleged Misconduct

110. Google directly benefits from its misconduct every time an auction clears on AdX that would not have cleared but-for the misconduct, or if the clearing price was higher than it would have been absent the misconduct.²⁸⁵ For example, each time an auction cleared in AdX because

²⁸⁴ I understand that Dr. Gans will further opine on Google's anticompetitive behavior and its effects in his report.

²⁸⁵ There are documents in the record that provide estimates of the direct monetary impact related to Google's misconduct. When asked to provide "Google's revenue and profits attributable to such Google Auction Mechanic" Google has stated that [REDACTED]

[REDACTED] Further, as I describe herein, Google's benefit from the misconduct is not limited to the direct monetary benefit of each misconduct.

[REDACTED]

[REDACTED]

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Google used DRS to adjust its take rate, Google directly benefited because it earned a fee that it would not have earned without employing DRS. Similarly, each time the clearing price of an auction was higher than it would have been but for Google's use of RPO, Google directly benefited because its fees are set as a percentage of the auction price. Therefore, the higher the clearing price, the higher Google's fee.

111. But these direct benefits are not the only way Google derived benefits from the alleged misconduct. Google also derived indirect benefits from the misconduct. These include obtaining funds that can be used for additional employees, to improve their technology, or to improve its relative position in the industry, including by funding acquisitions. Google's benefits related to the misconduct are also enhanced by other factors.

112. Since Google entered the display advertising space in 2003 with AdSense,²⁸⁶ the company has steadily increased its presence in the industry, both in terms of size and scale. What started as a tool to help publishers monetize website space now includes large and small advertiser (buy-side) tools, publisher (sell-side) tools including publisher ad servers, as well as the ad exchange to intermediate between the two sides of the display advertising platform.²⁸⁷ Not only has Google's scope expanded to cover all aspects of the display ad ecosystem, but in each portion of the stack Google has grown and its tools now dominate.²⁸⁸ Economic analysis shows that

[REDACTED]

[REDACTED]

²⁸⁶ "Google Expands Advertising Monetization Program for Websites," Google Blog, June 18, 2003, available at <https://googlepress.blogspot.com/2003/06/google-expands-advertising-monetization.html>.

²⁸⁷ Expert Report of Dr. Joshua Gans, June 7, 2024, Section III.A.

²⁸⁸ Expert Report of Dr. Joshua Gans, June 7, 2024, Sections V.C, V.D, V.E.

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Google accounts for 40 to 90 percent of each segment of the display advertising market.²⁸⁹ This market positioning is attributable, in part, to the indirect benefits Google has gained from the deceptive trade practices and antitrust misconduct at issue in this matter.

113. Three major acquisitions helped Google position itself for dominance in the display advertising space: DoubleClick in 2008, Invite Media in 2010, and AdMeld in 2011.²⁹⁰ Google leveraged its significant assets in each case to make the acquisitions, buying DoubleClick for \$3.1 billion, Invite Media for \$81 million, and AdMeld for \$400 million.²⁹¹ In each instance Google acquired a technology to bolster its own offerings and eliminated a potential alternative.²⁹² For example, in 2010, shortly after the DoubleClick acquisition, Google launched the Google Display Network (“GDN”) saying “[o]ver the past year, we’ve been focused on investing in display advertising, and we’ve seen great momentum from the increasing number of you running display campaigns with Google ... To provide more places for you to run display ads, we’ve added more publisher sites (through Google AdSense and DoubleClick Ad Exchange) to our ad network of over one million sites ... In an effort to make our display media offerings clearer to advertisers like you and agencies, we’re creating a new umbrella name for all these properties, the Google Display Network.”²⁹³ Additionally, I understand that Google has benefitted from indirect network

²⁸⁹ *How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>. See also Expert Report of Dr. Joshua Gans, June 7, 2024, Sections V.C, V.D, V.E.

²⁹⁰ *How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

²⁹¹ “Google Buys DoubleClick for \$3.1 Billion,” New York Times, April 14, 2007, available at <https://www.nytimes.com/2007/04/14/technology/14DoubleClick.html>; “Google’s Final Price Tag for Invite Media: \$81 Million,” All Things D, June 9, 2010, available at <https://allthingsd.com/20100609/googles-final-price-tag-for-invite-media-81-million/>, accessed 6/3/2024; “Google Acquires AdMeld For \$400 Million,” TechCrunch, June 9, 2011, available at <https://techcrunch.com/2011/06/09/google-acquires-admeld-for-400-million/>.

²⁹² *How Three Mergers Buttressed Google’s Ad Tech Monopoly, Per DOJ*, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

²⁹³ “Introducing the Google Display Network,” Google Blog, June 18, 2010, available at <https://adwords.googleblog.com/2010/06/introducing-google-display-network.html>, accessed 5/15/2024.

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effects that exist in the ad exchange market.²⁹⁴ As Dr. Gans explains in his report, network effects occur when the value of a product or service increases as more people use it, creating a positive feedback loop.²⁹⁵ Those firms that are able to achieve scale in a market characterized by indirect network effects reap advantages, including creating high entry barriers for competitors.²⁹⁶ I understand that Dr. Weinberg has opined that the benefit to Google from RPO, DRS and Project Bernanke could include increased AdX win rates and revenue, as well as decreased win rates and revenues for non-AdX exchanges.²⁹⁷ The increased AdX win rates result in attracting more publishers and advertisers to Google's platform, while decreased win rates and revenues for non-AdX result in decreased competition.²⁹⁸ As such, Google will continue to benefit from the alleged misconduct in the future due to its improperly enhanced position.

114. Finally, I understand that Plaintiff States' allegations in this case include antitrust claims in addition to the deceptive trade practices claims. While separate and distinct, these allegations relate in some ways to the same type of conduct (for example, Project Bernanke) and in the sense that each type of misconduct has the ability to enhance the other. For example, Dr. Gans concludes that Google's DFP and Google's AdX have monopoly power in their respective

²⁹⁴ Expert Report of Dr. Joshua Gans, June 7, 2024, Section V.D.

²⁹⁵ Expert Report of Dr. Joshua Gans, June 7, 2024, Section V.D.

²⁹⁶ Expert Report of Dr. Joshua Gans, June 7, 2024, Section V.D.

²⁹⁷ Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 7.E; Section 8.F, Section 9.C. I note that Dr. Weinberg observes that the effect of RPO on the AdX win rate may be ambiguous as it depends on the effectiveness of the program because RPO has certain offsetting factors on auction win rates. However, according to Dr. Weinberg, it is reasonable to expect Google, a sophisticated seller with access to significant amounts of data, to be able to achieve this. *See* Expert Report of Dr. Matthew Weinberg, June 7, 2024, Section 9.C. Google documents indicate Dr. Weinberg's intuition is correct.

²⁹⁸ Expert Report of Dr. Joshua Gans, June 7, 2024, Section V.D. ("Higher match rates, broader reach, and high-paying ads make an established ad exchange more attractive to both types of participants, reinforcing the network effects").

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relevant markets,²⁹⁹ and further that publishers are locked in to using the DFP ad server.³⁰⁰ Thus Google's deceptive misconduct affecting DFP publishers on AdX is enhanced because of publisher difficulty in leaving the platform – they cannot easily switch to a non-deceptive competitor. As I explain above, due to indirect network effects, increased AdX win rates and revenue from the deceptive misconduct results in attracting more publishers and advertisers to Google's platform, furthering Google's monopoly position. Hence, each type of alleged conduct reinforces the other.

115. The deceptive misconduct alleged in this matter is thus properly viewed as part of an overall scheme by Google to dominate and maintain its place in the display advertising industry using various levers at its disposal, including the misconduct at issue. Google gained both direct and indirect benefits as a result of its misconduct.

ii. Quantification of Google's Benefits

116. Ideally, Google's benefits from the alleged misconduct should be measured as the incremental benefits it obtained by engaging in the misconduct. Such an analysis is commonly referred to as a "but for" analysis and involves comparing Google's actual financial position given the misconduct that occurred (including past profits, market position, and expected future profits), to the financial position Google would have been in but for the misconduct. The concept of a "but-for" analysis is well established in the context of quantifying damages and other forms of monetary relief, and therefore, is instructive in determining how such analyses should be performed for the purposes of determining statutory penalties as well. For example, unjust enrichment, a form of monetary relief, is measured as the difference between the profits that the defendant actually

²⁹⁹ Dr. Gans states that "Google's DFP has monopoly power in the market for publisher ad servers for selling open web display advertising space" and that "AdX has monopoly power in the market for ad exchanges for transacting indirect open web display advertising." See Expert Report of Dr. Joshua Gans, June 7, 2024, Sections V.C, V.D.

³⁰⁰ Expert Report of Dr. Joshua Gans, June 7, 2024, Section VI.

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earned and the profits they would have earned but for the misconduct.³⁰¹ Similarly, lost profit damages are measured as the difference between the profits that the plaintiff would have earned but for the misconduct and the profits it did earn given that the misconduct that occurred.³⁰² As yet another example, diminution in business value damages are measured as the difference between the value of the plaintiff's business but for the misconduct and its value given the misconduct that occurred.³⁰³ Because value is based on expected future earnings, such an analysis takes into account the differences in the injured party's market position and the expected future benefits from the market position.

117. Unfortunately, the information required to perform such an analysis in this case is currently not available. I understand that the Plaintiff States have issued requests for information related to the number of impressions affected by certain Google programs at issue in this litigation (including RPO, DRS and Project Bernanke), Google revenue and profits attributable to these programs, and any additional value gained by Google related to these programs. However, to date, that information has not been produced by Google. Instead, [REDACTED], a software engineer at Google, submitted a declaration on May 24, 2024 responding to Plaintiff States' requests in which he stated that: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

³⁰¹ Boushie, Kristopher A., et al. *Calculating and Proving Damages*. Law Journal Press, 2011, §1.04[1] at 1-9, §9.10[1] at 9-40.

³⁰² Boushie, Kristopher A., et al. *Calculating and Proving Damages*. Law Journal Press, 2011, §1.04[1] at 1-7., §9.09[1] at 9-34; Weil, Roman L. et al. *Litigation Services Handbook The Role of the Financial Expert*, John Wiley & Sons, Inc. 2012, Fifth Edition, 4.8.

³⁰³ Boushie, Kristopher A., et al. *Calculating and Proving Damages*. Law Journal Press, 2011, §1.04[1] at 1-9.; Weil, Roman L. et al. *Litigation Services Handbook The Role of the Financial Expert*, John Wiley & Sons, Inc. 2012, Fifth Edition, 4.x.

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[REDACTED]

[REDACTED]

[REDACTED]³⁰⁴

118. As such, to date, Google has not produced information relevant and necessary to quantify the direct benefits, much less the indirect benefits from the alleged misconduct. Given the interconnectedness of the misconduct and the lack of information and data produced to date, I am unable to determine Google's financial benefit absent the misconduct, and therefore, cannot determine the incremental benefit to it from engaging in the misconduct. Additionally, I also cannot isolate the profit or revenue associated with each misconduct on its own. In lieu of an incremental benefits analysis, I consider two alternative quantitative measures – Google's display advertising profit and their display advertising revenue – that provide an indication of the aggregate benefit Google has derived during the period in which it engaged in the misconduct.

119. As I show in **Table 1** above, Google's operating profit and revenue associated with its display advertising segment allocable to the Plaintiff States between 2013 and 2023 totaled [REDACTED]. Operating profit measures the income earned from Google's operation of the display segment after paying operating costs, however it does not measure the totality of Google's benefit from its misconduct nor its ability to leverage its gains from this misconduct.

120. For example, [REDACTED]

[REDACTED]³⁰⁵ [REDACTED]

³⁰⁴ See Declaration of [REDACTED] in Support of Defendant Google LLC's Responses to Plaintiffs' Third Set of Interrogatories, May 24, 2024. See also Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, Responses to Interrogatories 7, 8 and 10.

³⁰⁵ See, for example, GOOG-DOJ-AT-02649870.

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[REDACTED] 306

[REDACTED]

[REDACTED] 307 [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

This should be considered when accounting for the benefit Google has gained from its display advertising misconduct.

121. Additionally, as I discuss above, Google's ability to grow by acquisition has been critical to its domination of the display advertising ecosystem. Google leveraged its significant assets to buy DoubleClick for \$3.1 billion in 2008, Invite Media for \$81 million in 2010, and AdMeld for \$400 million in 2011.³⁰⁸ Google's ability to take these actions is key its ability to dominate the display advertising ecosystem. Google's operating profit in display does not adequately represent this benefit to Google's positioning.

122. Finally, Google's past operating profit in the display advertising segment ignores the future gains that Google stands to make by virtue of its misconduct to date. By engaging in the misconduct, Google has benefitted itself to the detriment of competitors and other participants in the display advertising ecosystem and assured that it can continue to do so well into the future.

123. For all of the above reasons, I consider Google's display advertising operating profit allocable to the Plaintiff States to be an inadequate and inappropriate proxy for the overall

³⁰⁶ GOOG-AT-MDL-002189396 at -403.

³⁰⁷ GOOG-AT-MDL-004326981 at -005.

³⁰⁸ How Three Mergers Buttressed Google's Ad Tech Monopoly, Per DOJ, Tech Policy Press (March 9, 2023), <https://www.techpolicy.press/how-three-mergers-buttressed-googles-ad-tech-monopoly-per-doj/>.

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benefit, both direct and indirect, that Google has gained from the misconduct. For this reason, I also consider Google's display advertising revenue allocable to the Plaintiff States as a consideration when assessing the total penalty necessary to eliminate Google's financial incentive to engage in the alleged misconduct.

G. The History of Previous Violations

124. In addition to the amount necessary to deter misconduct, I also considered Google's history of previous violations, which I understand is an additional relevant factor in determining a civil penalty. My understanding is that this factor takes into account the track record of settlements and fines that the alleged wrongdoer has incurred in the past as relevant to the trier of fact in determining an appropriate penalty.

125. Google has paid numerous fines and settlements related to various alleged misconduct. [REDACTED]

[REDACTED], Google also settled litigation in California in September 2023 related to alleged improper tracking of user location data for \$93 million.³¹⁰ Google also settled litigation in California in early 2024 related to alleged improper tracking of users in Chrome's Incognito mode.³¹¹ Though this settlement included only injunctive relief, that relief was valued at more than \$5 billion and individual plaintiffs may still bring suit for damages.³¹²

³⁰⁹ [REDACTED]

³¹⁰ "Google to pay \$155 million in settlements over location tracking," Reuters, September 15, 2023, available at <https://www.reuters.com/legal/google-pay-155-million-settlements-over-location-tracking-2023-09-15/>, accessed 5/29/2024.

³¹¹ *Brown et al. v. Google LLC*, Plaintiffs' Unopposed Motion for Final Approval of Class Action Settlement, April 1, 2024.

³¹² *Brown et al. v. Google LLC*, Plaintiffs' Unopposed Motion for Final Approval of Class Action Settlement, April 1, 2024.

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126. This information is relevant here because, although Google has been forced to pay [REDACTED] for various misconduct over the past several years, these monetary penalties have not proven to be detrimental to Google, and in fact in total represent [REDACTED].³¹³ These penalties have also been insufficient as a method to deter Google's various misconduct, which I understand is ongoing according to the petition in this matter.³¹⁴ A jury considering the appropriate amount of penalties should weigh this information when contemplating Google's misconduct and the sufficient penalty to deter future misconduct.

H. The Trier of Fact Should Award Deceptive Trade Practice Penalties in the Range of [REDACTED]

127. **Table 4** below presents a range of total penalties associated with each misconduct based on my violation counts above and a range of per violation penalties [REDACTED].³¹⁵

³¹³ [REDACTED]

³¹⁴ *See, for example*, Complaint at ¶¶587, 589.

³¹⁵ [REDACTED]

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[REDACTED]

128. Based upon the information available to me as of today, the analysis presented in this report, as well as my education, training and experience, I conclude that it would be reasonable and appropriate for the trier of fact to assess a penalty [REDACTED]

[REDACTED]³¹⁶

129. In line with the deceptive trade practice factors that I discuss in detail above, these levels of penalties could have a sufficiently meaningful impact on Google's financial position to act as a deterrence of future violations but would not be so burdensome as to impact the day-to-day operations of the company or bankrupt Google, which I discuss in the next section.

130. Assessing this level of penalty per violation would result in a maximum of \$21.81 billion in total penalties. The maximum represents total penalties if the trier of fact determined that penalties should only be assessed on the Bernanke claim covering the period November 2013 to present. The maximum also represents the cap on penalties if the trier of fact determines that

³¹⁶ I understand that Alaska's AUTPCPA references a minimum civil penalty of \$1,000 per violation. While I do not include a \$1,000 minimum penalty per violation in my calculations, the trier of fact may multiply the number of violations I calculate in this report by the minimum penalty amount consistent with the AUTPCPA in assessing the total penalty amount.

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penalties should be assessed to cover all claims as this figure is based on the total Open Auctions during this period and each auction should only be counted once as a violation.³¹⁷

I. The Economic Effect on the Person Against Whom the Penalty is to be Assessed

131. I also understand that the economic effect of a penalty on Google is a relevant factor for the trier of fact in its determination of a penalty. There are several metrics and ratios that financial analysts use to evaluate the economic and financial condition of a company. Some key areas analysts usually focus on include a company's profitability, assets, and cash flows. Analysts sometimes have preferences of certain metrics and ratios versus others but there is not a set of metrics or ratios that will capture the full information set of a company. Below I will show the impact on Google from paying a total civil penalty of \$29.08 billion on its profitability, assets, and cash flow by using some common financial metrics and ratios. This is the maximum penalty I show in **Table 4** above. As I discuss below, a total penalty of \$29.08 billion would have a sufficiently meaningful impact on Google's financial position to deter future violations but would not be so burdensome as to impact the day-to-day operations of the company or bankrupt Google. While the trier of fact may choose to assess a lower penalty, the economic impact on Google of a lower penalty would also be lower.

i. Impact on Profitability

132. Google will record any civil penalty imposed as a general and administrative expense.³¹⁸ As such, Google's operating expenses for the period of the penalty will increase and its profitability will decrease. EBIT (Earnings Before Interest and Taxes), EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization), Net Income, and Earnings per Share are

³¹⁷ I provide total penalties related to certain misconduct broken out into subperiods (DRSv1, DRSv2, Second Price Bernanke, and First Price Bernanke) in **Exhibit 7**.

³¹⁸ See Alphabet Inc. 10-K Year Ended December 31, 2023, pp. 77-78.

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all common measures analysts use to assess a company's profitability. I describe their uses briefly below:

- EBIT serves as a measure of a company's profitability from its core business before the impact of its capital structure choices and tax treatments.
- EBITDA, which is EBIT plus Depreciation and Amortization serves as a proxy for operating cash flow as Depreciation and Amortization are non-cash expenses.
- Net Income is the earnings of a company, its bottom line, or profit. Compared to EBIT, it deducts both interest and tax expenses as well as adding non-core income and subtracting non-core expenses. Net Income is earnings available for the equity holders of the company.
- Earnings per share is calculated as $\frac{\text{Net Income}}{\text{Shares Outstanding}}$. It is often used by analysts and investors for estimating a company's value as investors will pay more for higher earnings per share value.

133. Additionally, profit margins can be calculated by dividing each of EBIT, EBITDA, and Net Income by Total Revenue. Profit margins indicate how efficient a company uses its assets and manages its operations.³¹⁹ All else equal, higher profit margins are desired.³²⁰

134. In **Table 5** below, I show Google's fiscal year 2023 EBIT, EBITDA, Net Income, Earnings per Share, and profit margins from 2013 through 2023 before and after a \$29.08 billion civil penalty.

³¹⁹ Ross, Westerfield, Bradford, *Fundamentals of Corporate Finance* McGraw-Hill Irwin, 9th edition, p. 61.

³²⁰ Ross, Westerfield, Bradford, *Fundamental of Corporate Finance* McGraw-Hill Irwin, 9th edition, p. 62.

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Table 5³²¹
Profitability Metrics
For the Year Ended December 31, 2023

<i>(in millions)</i>					Margins		
Penalty	EBIT	EBITDA	Net Income^[A]	Earnings per Share^[B]	EBIT	EBITDA	Net Income
None	\$88,226	\$100,172	\$73,795	\$5.80	28.7%	32.6%	24.0%
\$29,076	\$59,150	\$71,096	\$44,719	\$3.51	19.2%	23.1%	14.5%
% Change	-33.0%	-29.0%	-39.4%	-39.4%	-33.0%	-29.0%	-39.4%

Notes:

[A] Per I.R.C. § 162(f), no deduction otherwise allowable shall be allowed for any amount paid or incurred (whether by suit, agreement, or otherwise) to, or at the direction of, a government or governmental entities in relation to the violation of any law or the investigation or inquiry by such government or entity into the potential violation of any law.

[B] Diluted Earnings per Share. Presented in actual dollar amounts.

Sources: Alphabet Inc. Form 10-K for the fiscal year ended December 31, 2023; S&P Capital IQ.

135. A \$29.08 billion penalty results in a significant but limited decrease of 29.0% to EBITDA and 39.4% to Net Income and Earnings per share.

ii. Impact on Assets

136. Google will be paying any civil penalties imposed with cash. This civil penalty payment will decrease Google's cash asset balance and its overall asset balance. Cash and cash equivalents are classified in a category of assets called current assets. Current assets are assets on the balance sheet that are expected to convert to cash within a year and are considered liquid assets.³²² Cash and cash equivalents are a company's most liquid assets.³²³ Examples of other current assets typically include accounts receivable, inventory, and marketable securities.

137. Current assets are important for a company's short-term liquidity and solvency and are used in calculating ratios known as short-term solvency ratios or liquidity ratios. Liquidity ratios are a measure of a company's short-term liquidity and are important to its short-term

³²¹ S&P Capital IQ.

³²² Ross, Westerfield, Bradford, *Fundamental of Corporate Finance* McGraw-Hill Irwin, 9th edition, p. 20.

³²³ Brealey, Richard A., Myers, Stewart C., and Allen, Franklin, *Principles of Corporate Finance*, McGraw-Hill/Irwin, Tenth Edition: 2011, p. 719.

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creditors.³²⁴ Some widely used liquidity ratios are the current ratio and the cash ratio. I describe each of these liquidity ratios briefly below.

- The current ratio is calculated as $\frac{\text{Current Assets}}{\text{Current Liabilities}}$.³²⁵ The current ratio shows a company's ability to pay its short-term liabilities on time.³²⁶ A healthy company's current ratio is expected to be at least 1 indicating that current assets are greater than current liabilities.³²⁷
- The cash ratio is calculated as $\frac{\text{Cash} + \text{Cash Equivalents}}{\text{Current Liabilities}}$. Because a company's most liquid assets are its holdings of cash,³²⁸ the cash ratio shows a company's ability to meet its current liabilities with only its cash and cash equivalents. The cash ratio is more conservative than the current ratio.

138. In general, higher liquidity ratios are preferred.³²⁹ In **Table 6** below, I show Google's Cash balance, Current Asset balance, Asset balance, and liquidity ratios as of the end of 2023 before and after a civil penalty of \$29.08 billion is assessed.

³²⁴ Ross, Westerfield, Bradford, *Fundamental of Corporate Finance* McGraw-Hill Irwin, 9th edition, p. 55.

³²⁵ Ross, Westerfield, Bradford, *Fundamental of Corporate Finance* McGraw-Hill Irwin, 9th edition, p. 55.

³²⁶ Pratt, Reilly, Schweih, *Valuing a Business*, McGraw-Hill Irwin, Third Edition: 1996, p. 130.

³²⁷ Ross, Westerfield, Bradford, *Fundamental of Corporate Finance* McGraw-Hill Irwin, 9th edition, p. 56.

³²⁸ Brealey, Richard A., Myers, Stewart C., and Allen, Franklin, *Principles of Corporate Finance*, McGraw-Hill/Irwin, Tenth Edition: 2011, p. 719.

³²⁹ Liquidity ratios that are too high may indicate an inefficient use of current assets. See Ross, Westerfield, Bradford, *Fundamental of Corporate Finance* McGraw-Hill Irwin, 9th edition, p. 56.

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Table 6³³⁰
Impact on Assets and Liquidity Ratios
For the Year Ended March 31, 2024

<i>(in millions)</i>				Liquidity Ratios	
Penalty	Cash & Cash Equivalents	Current Assets	Total Assets	Current Ratio^[A]	Cash Ratio^[B]
None	\$24,493	\$165,471	\$407,350	2.15	0.32
\$29,076	\$0	\$136,395	\$378,274	1.77	0.00
% Change	-100.0%	-17.6%	-7.1%	-17.6%	-100.0%

Notes:

[A] Current Ratio = (Current Assets) / (Current Liabilities)

[B] Cash Ratio = (Cash & Cash Equivalents) / (Current Liabilities)

Source: Alphabet Inc. Form 10-Q for the quarterly period ended March 31, 2024.

139. While a \$29.08 billion penalty exceeds Google's Cash and Cash Equivalents balance of \$24.43 billion as of March 31, 2024, Google also holds \$83.60 billion in Marketable Securities as of that date.³³¹ Marketable securities are extremely liquid assets that can be used to pay a \$29.08 billion penalty and/or to provide Google with sufficient cash for normal operations without liquidating other assets or seeking external financing. Indeed, Google's recently announced \$70 billion share repurchase authorization also exceeds its available Cash and Cash Equivalents balance and will likely be funded by liquidating its Marketable Securities. Overall, while a \$29.08 billion penalty would reduce Google's total assets and current assets base, as well as its current ratio, it would not cause Google any operational challenges, liquidity needs, or solvency concerns. This is evidenced by Google's decision to authorize a \$70 billion share repurchase program. This indicates that Google has already determined that it can continue operating even with a \$70 billion reduction in its current assets. If needed, it can pause, delay or

³³⁰ See Alphabet Inc. Form 10-Q for the quarterly period ended March 31, 2024, p. 5.³³¹ See Alphabet Inc. Form 10-Q for the quarterly period ended March 31, 2024, p. 5.

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reduce its share repurchases to pay the penalty assessed in this case and avoid any impact to its business greater than what it has already determined is acceptable.

iii. Impact on Cash Flow

140. Cash flows measure the difference between cash inflow and cash outflow of a company over a period of time.³³² Operating cash flow is the cash flow that results from the company's day-to-day activities of producing and selling its products. Analysts are interested in operating cash flow as it generally indicates whether a firm's cash inflows from its business operations are sufficient to cover its cash outflows. Negative operating cash flows are considered undesirable and could be a sign of trouble.³³³ Because Google will pay any civil penalties with cash, its operating cash flow for the period of the penalty will be reduced. In **Table 7** below, I show Google's fiscal year 2023 operating cash flow before and after a \$29.08 billion civil penalty is assessed.

Table 7³³⁴
Operating Cash Flow For the Year Ended December 31, 2023

<i>(in millions)</i>	
Penalty	Operating Cash Flow
None	\$101,746
\$29,076	\$72,670
% Change	-28.6%

Source: Alphabet Inc. 10-K for the fiscal year ended December 31, 2023.

141. Google's operating cash flows for 2023 are positive and will remain positive after a \$29.08 billion penalty. This penalty will only reduce Google's operating cash flow by 28.6% and will not have any significant effect on Google's ability to conduct day to day operations.

³³² Ross, Westerfield, Bradford, *Fundamental of Corporate Finance* McGraw-Hill Irwin, 9th edition, pp. 30-31.

³³³ Ross, Westerfield, Bradford, *Fundamental of Corporate Finance* McGraw-Hill Irwin, 9th edition, p. 32.

³³⁴ See Alphabet Inc. 10-K for the fiscal year ended December 31, 2023, p. 55.

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Dated,

June 7, 2024

A handwritten signature in blue ink, appearing to read "Jeffrey Andrien". The signature is written in a cursive, flowing style.

Jeffrey S. Andrien



5918 W. Courtyard Drive | Suite 250 | Austin, TX 78730

JEFFREY S. ANDRIEN

Senior Managing Director

EDUCATION

THE UNIVERSITY OF TEXAS AT AUSTIN, McCombs School of Business, Austin, TX
M.B.A.

THE UNIVERSITY OF TEXAS AT AUSTIN, Austin, TX
B.A., Economics

PRESENT POSITION

COHERENT ECONOMICS, Austin, TX.
Senior Managing Director, 2021–Present

PROFESSIONAL EXPERIENCE

THE CLARO GROUP, Austin, TX
Managing Director, 2013–2021

FINANCE SCHOLARS GROUP, Austin, TX
President, 2009–2013
Director, 2008–2009

CRA INTERNATIONAL
Vice President, 2007–2008

ERS GROUP
Principal, 2004-2007

LECG (and predecessor companies)
Senior Engagement Manager, 1998-2004

TEACHING EXPERIENCE

The University of Texas, McCombs School of Business – Lecturer in the Finance Department (Jan 2020 - present). Teaching the core undergraduate Business Finance course. Also teach applied graduate-level finance class.

Thammasat University, Masters-in-Marketing Program – Visiting Professor of Finance and Economics (2006 – 2018). Taught graduate-level course on Marketing Profitability and Intangible Asset Valuation. Member, MIM Admissions Committee.

The University of Texas, McCombs School of Business – Adjunct Professor of Marketing in the MBA Program (Spring 2012). Taught graduate course on managing a global enterprise.

The University of Texas School of Law - Guest Lecturer: Capital Budgeting and Valuation (January 31, 2011), Economics Damages (April 4, 2011).

Washington University in St. Louis, Olin School of Business – Visiting Lecturer (Summer 2008). Taught MBA course on Marketing Profitability and Intangible Asset Valuation.

Vanderbilt University, Owen School of Business – Guest Lecturer in EMBA Program: Brand Valuation (Fall 2008).

ASSOCIATIONS AND MEMBERSHIPS

Customer Experience Certificate Advisory Board, University of Houston, Bauer School of Business, Board Member 2020-2022

University of Texas MSF Advisory Board, McCombs School of Business, Board Member 2014-2021

Thammasat University Masters-in-Marketing (MIM) Admissions Committee 2012-2019

American Bar Association, Associate Member

American Intellectual Property Law Association, Member; Patent Damages Subcommittee, Member; Trademark Litigation Committee, Member.

Austin Intellectual Property Law Association, Member

International Trademark Association, Former Member

Rice University Career Advisory Board (Former Member)

Austin Youth Hockey Association (Former Board Member)

PUBLICATIONS AND PRESENTATIONS

“Lessons from the Trenches: Damages Experts,” CLE presentation and accompanying article for the Texas Bar Association’s Advanced Intellectual Property Law course (February 2019). Article co-authored with Chris Bakewell and Leisa Peschel.

"Patent Damages 101," coordinator and panelist for CLE presentation at the AIPLA's 2016 Annual Meeting (October 2016).

"U.S Shale Play Development ," CLE presentation to Haynes Boone, Beck Redden, and K&L Gates (All done in 2015).

Valuation expert in mock trial at the *Forensic Finance: Better Bankruptcies Through Better Numbers* Conference in Austin, Texas on September 9, 2015.

"Brand Imperative: Protecting Your Most Valuable Asset" (with Benoit and Zerrillo), *The Future of Branding*, Sage Publications, 2016.

"The Four Stages of Lead Partner Relationship Development" (with Chris Paskach), *Claro Newsletter*, Summer 2015.

"The Evolution of Trademark Litigation Related to Keyword Searches" (with Prateek Shah), *Claro Newsletter*, Spring 2015.

"Protecting Intellectual Assets ," Presentation at Singapore Management University, February 2015.

"Protecting an Asian Treasure," *Asian Management Insights*, Vol. 1 Issue 2, November 2014.

"Principles of Business Valuation," CLE presentation to Jones Day in 2015, Nixon Peabody in 2014, Brown McCarroll in 2007, AYLA in 2007, and DYLA in 2007.

"Consumer-Based Conjoint Analysis," CLE presentation to Covington Burling, November, 2013.

"Brand Valuation," Presentation to the Leading Brands Club of Vietnam, Ho Chi Minh City, Vietnam, March 2010.

"Approaches to Brand Valuation in a Global Marketplace," Presentation at the American Intellectual Property Lawyer's Midwinter Meeting, Miami, FL, January 2009.

"Sub-Prime Crisis: How Did We Get Here and What Comes Next? " CLE Presentations to Vinson & Elkins, Winstead, Brown McCarroll, and Fulbright and Jaworski (all done in 2008).

"Working with Financial Experts," CLE presentation to Greenberg Traurig, 2007.

"Understanding Financial Statements," CLE presentation to Hunton and Williams, 2006.

“Lessons from the Trenches: Damages Experts,” panelist at the Texas Bar Association’s 32nd Annual Advanced Intellectual Property Law Course, Dallas, TX, February 2019. Co-authored article related to topic for the course materials.

Taught Brand Valuation seminar to employees of Universal Robina (Filipino food company), July 31, 2020.

TESTIMONY AND EXPERT REPORTS

Betsy Aubrey et al. v. DOBI Medical International, Inc., et al.

Civil Action No.: A-05-CA-1070-SS. Western District of Texas, Austin Division.

Issued Federal Rule 26 report and deposition testimony. 10b-5 Damages case.(2007)

Giddy Up, LLC v. Prism Graphics, Inc. et al.

Civil Action No.: 3:06-CV-0948-BECF. Northern District of Texas, Dallas Division. Issued Federal Rule 26 report and trial testimony related to intellectual property damages. (2007)

Marquis Furniture, Inc. v. Mathis Bros. Furniture Co., Inc., et al.

Case No. CIV-04-1604-F; USDC Western District of Oklahoma. Issued Federal Rule 26 report, Antitrust damages related to price discrimination. (2008)

CenterPoint Energy 2010 Rate Case

Public Utility Commission of Texas, Docket No. 38339. Issued written testimony, dated June 30, 2010 and testified at PUC hearing. Testimony related to cost of services. (2010)

Frank H. Migl, et al. v. Watson Pipe, Inc., et al.

Case No: 07-05-20634-cv; in the 25th Judicial District Court, Lavaca County, Texas. Issued written report, dated June 28, 2010 and testified at deposition. Testimony related to discount rate for damages calculation. (2010)

Stripes, LLC v. Carlson Restaurants Worldwide, Inc. et al.

Case No: 7:11-CV-00019, USDC Southern District of Texas, McAllen Division. Issued Federal Rule 26 Report, dated January 13, 2012 and testified in deposition. Damages related to trademark infringement. (2012)

Dynamis Therapeutics, Inc. v. Alberto Culver International, Inc.

Case No: 09-773-GMS, USDC District of Delaware. Issued Federal Rule 26 Report, dated April 9, 2012 and testified in deposition. Damages related to the alleged breach of contract of a licensing agreement. (2012)

Securities and Exchange Commission v. Oxford Investment Partners, LLC and Walter J. Clarke

File No: 3-14899, SEC Administrative proceeding. Issued valuation report, dated September 4, 2012. (2012)

Keurig, Inc. v. Sturm Foods, Inc.

Case No: 10-841-SLR-MPT, USDC District of Delaware. Issued Federal Rule 26 Reports, dated November 21, 2012 and December 14, 2012. Testified in deposition on December 19, 2012. Damages related to trademark infringement, trade dress infringement, false advertising and unfair competition. (2012)

Memory Lane, Inc. v. Classmates International, Inc., d/b/a Classmates, et al.

Case No: SACV-1100940-JST (MLGx), USDC Central District of California, Southern Division. Issued Federal Rule 26 Report, dated December 26, 2012. Deposed on April 19, 2013. Testified at trial on February 18, 2014. Testimony addressed liability and damages issues related to trademark infringement. (2012)

Bear Ranch, LLC v. Heartbrand Beef, Inc. American Akaushi Association, and Ronald Beeman

Case No: 6:12-cv-14, USDC Southern District of Texas, Victoria Division. Issued Federal Rule 26 reports on April 12, 2013 and November 22, 2013. Deposed on May 14, 2014 and testified at trial on May 27-28, 2014 and September 11, 2014. Valuation of cattle herd and damages related to breach of contract and fraud claims. (2013)

National Financial Partners Corp. v. Paycom Software, et al.

Civil Action No. 14-cv-7424, USDC Northern District of Illinois, Eastern Division. Issued Declaration in opposition of Plaintiff's Motion for Preliminary Injunction on April 20, 2015. Issue related to irreparable harm resulting from alleged trademark infringement. (2015)

Avnet, Inc. and BSP Software, LLC v. Motio, Inc.

Case No. 1:12-cv-02100, USDC Northern District of Illinois, Eastern Division. Issued Federal Rule 26 report on December 16, 2015 and a rebuttal report on February 10, 2016. Deposed on March 15 2016. Damages related to patent infringement in the software industry. (2015)

US Imaging, Inc. v. US Imaging Network, LLC et al.

Cause No. 2015-32810, District Court of Harris County, TX, 80th Judicial District. Filed report on January 11, 2016. Liability and Damages related to trademark infringement in the medical industry. (2016). Provided deposition testimony on October 25, 2016.

TinicumCapital Partners II, L.P., et al. v. Liberman Broadcasting, Inc. et al.

C.A No. 11902-VCL, Court of Chancery of the State of Delaware. Filed report on February 17, 2016 and rebuttal report on February 23, 2016. Deposed on February 28, 2016. Case involved valuing the expected outcomes of the FCC Incentive Spectrum Auction under different participatory strategies. Issues related to irreparable harm and business strategy. (2016)

United States of America v. Michael Marr et al.

Case No. CR-14-00580-PJH, US District Court, Northern District of California, Oakland Division. Filed declaration on March 17, 2016. Case involved analyzing foreclosure

auction results to determine if there was evidence that the auction prices were suppressed as a result of collusive behavior by the defendants. (2016)

Linda Suchanek, et al. v. Sturm Foods Inc., and Treehouse Foods, Inc.

Case No. 3:11-cv-00565-NJR-PMF, US District Court, Southern District of Illinois. Filed Expert Report on April 28, 2016. Deposed on May 24, 2016. Case involved analyzing damages issues in a class action lawsuit alleging false advertising in the single-serve instant and micro-ground coffee industry. (2016)

Surgiquist, Inc. v. Lexion Medical, LLC

Case No. 14-cv-0382-GMS, US District Court for the District of Delaware. Filed Expert Report on June 24, 2016. Case involved analyzing damages resulting from false and misleading advertising in the market for medical devices for laparoscopic surgery. Provided deposition testimony on November 3, 2016, and trial testimony on April 6, 2017.

Natural Dynamics, LLC. v. Calm Natural Limited, et al.

Case No. 14-cv-0382-GMS, US District Court for the Western District of Texas, Austin Division. Filed Expert Report on September 23, 2016. Case involved analyzing damages resulting from claims of trade secret misappropriation, breach of contract, and tortious interference in the market for nutraceuticals. Filed supplemental report on October 24, 2016, and a supplemental report on June 16, 2017. Provided deposition testimony on December 5, 2016.

David Weiner, et al. v. Ocwen Financial Corporation, et al.

Case No. 2:14-cv-02597-MCE-DB, US District Court for the Eastern District of California. Filed Expert Report regarding class certification on January 30, 2017 in a class action case that involved analyzing loan level data to determine fees paid by borrowers related to certain mortgage-related valuation services. Filed Rebuttal Expert Reports on April 5, 2017 and May 6, 2019. Filed a Damages Report on March 6, 2019. Provided deposition testimony on February 21, 2017 and on April 5, 2019.

Dina Andren et al. v. Alere, Inc., et al.

Case No. 3:16-cv-01255-GPC-NLS, US District Court for the Southern District of California. Filed Expert Report on June 21, 2017. Case involved class action damages related to claims of deceptive and misleading trade practices in the medical device industry.

Sphero Inc. v. Spin Master, LTD., et al.

Case No: 17-cv-5428, US District Court for the Southern District of New York. Filed Expert Declaration on July 18, 2017 pertaining to irreparable harm and balance of equities related to a preliminary injunction motion. Case involved claims of deceptive patent infringement in the consumer electronics market. Provided deposition testimony on August 17, 2017 and hearing testimony on August 23, 2017.

United States of America v. Jesse Roberts, III

Criminal No: 15-20-JWD-EWD, US District Court for the Middle District of Louisiana.

Testified at trial on August 8, 2017. Testimony pertained to analyses of securities trading records in an insider trading case.

Barbara Waldrup, et al v. Countrywide Financial Corporation, et al.

Case No.: 2:13-cv-08833-CAS(AGRx) consolidated with Case No.: 2:16-cv-4166

CAS(AGRx), US District Court for the Central District of California. Filed Expert report on August 28, 2017 and testified at deposition on September 22, 2017. Testimony pertained to class-wide damages resulting from claimed illegitimate appraisals for home mortgages.

Custopharm, Inc. v. Chemworth, Inc., et al.

Case No.: AU:15-CV-00841-RP, US District Court for the Western District of Texas,

Austin Division. Filed Expert report on October 17, 2017. Case involved breach of contract claims between two drug development companies. Supplemental report filed on January 10, 2018. Testified at trial on April 18, 2018.

Twin Rivers Engineering, Inc. v. Fieldpiece Instruments, Inc., et al.

Case No.: 2:16-cv-04502-MLH-MRW, US District Court for the Central District of

California. Filed Expert report on December 27, 2017. Case involved liability and damages assessments related to antitrust, Lanham Act, and patent infringement claims in the hand-held leak detector industry. Testified at trial on May 31, 2018.

RSL Holding, LLC et al. v. Gregory Smith, et al. AND Iberiabank v. US Rail Services, LLC, et al.

Cause No.: 2016-46164, 164th Judicial District of Harris County, Texas; and Cause No.: 2016-58070, 129th Judicial District of Harris County, Texas. Filed Expert Affidavit on February 5, 2018. Case involved valuation and damages assessments related to breach of contract and fraud claims in post-acquisition dispute.

Total Rod Concepts, Inc. v. Glasforms, Inc., et al.

Cause No.: 14-05-05365, in the District Court for the 410th Judicial District, Montgomery County, Texas. Filed Expert report on February 21, 2018, and provided deposition testimony on March 23, 2018. Case involved damages assessments related to breach of contract and misappropriation of trade secrets claims in the fiberglass sucker rod industry.

S&A Capital Partners, Inc. et al. v. JP Morgan Chase Bank, N.A., et al.

Case No.: 1:15-cv-00293-LTS-JCF, US District Court in the Southern District of New

York. Filed Expert report on July 9, 2018 and sur-rebuttal report on December 17, 2018. Case involved damages assessments related to breach of contract and fraud in the market for distressed residential mortgages. Testified at deposition on January 31, 2019.

Greg Friedlander, et al. v. John V. "Jack" McGary

Cause No.: D-1-GN-16-005169, in the District Court for the 261th Judicial District, Travis County, Texas. Filed Expert report on August 1, 2018. Case involved damages

assessments related to breach of fiduciary duty and fraud in the market for the booking of celebrity speakers. Testified at trial on January 17, 2019.

Likarish Enterprises, Inc. v. SkiHi Enterprises, Ltd.

Cause No.: CV-16-0910, in the District Court for the 397th Judicial District, Grayson County, Texas. Filed Expert report on August 7, 2018. Case involved damages assessments related to breach of contract, negligence, and breach of duty to perform in the alcoholic spirits market.

CVS Heath Corporation, et al. v. Vividus, LLC., et al.

AAA Case No. 01-14-0002-0801, American Arbitration Association. Filed Expert report on September 21, 2018. Case involved quantifying antitrust and commercial damages related to claims of collusion and breach of contract in the market for compounding pharmacies.

Sally Ann Reagan v. Ganesh Ramachandran Iyer and Morgan Stanley

FINRA Case No. 17-01985. Filed Expert report on October 10, 2018 and testified at the arbitration hearing on November 1, 2018. Case involved analyzing the riskiness of investments and assessing damages in an arbitration claiming an investor's funds were invested in unsuitable investments.

HEB Grocery Company, LP v. Todd Meagher, et al.

Civil Action No. 4:17-cv-02810, in the United States District Court of the Southern District of Texas, Houston Division. Issued Federal Rule 26 Report, dated November 2, 2018 and testified at deposition on December 19, 2018. Case involved valuing a start-up business and assessing damages associated with the Defendants' counterclaim of trademark bullying.

ExxonMobil, et al. v. Deutsche Telekom, et al.

2014 WIPO Arbitration Rules, CASE NO. WIPOA130218. Issued expert report on February 21, 2019 and a rebuttal report on April 11, 2019 in an International arbitration in London. The report addressed "negotiating damages" resulting from the alleged breach of a settlement agreement related to a prior trademark dispute.

Acceleron, LLC v. Dell, Inc.

Case Number 1:12-cv-04123, US District Court, Northern District of Georgia, Atlanta Division. Issued expert report on May 24, 2019 in a patent infringement dispute involving blade server technology. The report addressed reasonable royalty damages, as well as a critique of the Plaintiff's expert report. Testified at deposition on June 21, 2019. Testified at trial on September 16-17, 2021.

Christopher M. Beuchler, et al. v. James W. Thompson, et al.

Cause Number D-1-GN-17-005884, District Court of Travis County, Texas, 459th Judicial District. Issued preliminary expert report on July 11, 2019 in a business dispute involving open source firewall and router software. The report addressed damages related to claims of fraud, breach of fiduciary duty, and breach of contract, among others.

Vitol Americas Corp. v. Targa Channelview, LLC.

Cause Number 2018-90859, District Court of Harris County, Texas, 80th Judicial District. Filed an initial expert report on December 12, 2019 in a business dispute involving a splitter facility in Channelview, TX. Report quantified benefit of the bargain and restitutionary damages. Provided deposition testimony on January 31, 2020 and on May 12, 2020. Provided trial testimony on September 29, 2020.

Emily Sears, et al. v. Russell Road Food and Beverage, et al.

Case Number 2019-cv-01091, United States District Court for the District of Nevada. Filed an initial expert report on March 2, 2020 in a Lanham Act dispute involving alleged misappropriation and unauthorized publication of the image and likeness of models. Report addressed the likelihood of confusion and economic damages.

Twinwood Cattle Company, Inc. v. American Akaushi Association, et al.

Civil Action Number 18-DCV-250789, in the District Court of Fort Bend County, Texas, 458th Judicial District. Filed an initial expert report on May 7, 2020 in a breach of contract and fraud dispute involving specialized Japanese cattle. Report addressed economic damages. Supplemental report filed September 18, 2020 and additional rebuttal report filed on March 16, 2021. Testified in deposition on July 8th, 2020 and April 23, 2021. Testified at court hearing on January 29, 2021 and at trial on July 15, 2021.

Jaymo's Sauces, LLC. v. The Wendy's Company

Case No.: 19-cv-1026, in the United States District Court for the Central District of Illinois. Filed an expert rebuttal report on October 23, 2020 in a trademark infringement case involving food products. Report addressed economic damages and unjust enrichment. Filed an affirmative expert damages report on January 29, 2021.

BNSF Railway Company, et al. v. Dynegy Midwest Generation, LLC.

AAA Case No.: 01-18-0001-3283, American Arbitration Association case. Filed an expert report on January 18, 2021 in a breach of contract case involving coal transportation to a power generation facility. Report addressed the issue of the appropriate discount rate for economic damages.

David Yoder and Yoder Naturals, LLC v. YGHR Sales, LLC et al.

Case No.: 8:18-cv-01983 DCC, in the United States District Court for the District of South Carolina, Anderson Division. Filed an expert report on January 22, 2021 in a trademark infringement case involving nutraceuticals. Report addressed the issue of likelihood of confusion. Testified at deposition on March 11, 2021.

In Re: WC South Congress Square, LLC Bankruptcy

Case No. 20-11107-tmd, in the United States Bankruptcy Court for the Western District of Texas, Austin Division. Issued expert report on April 9, 2021 related to the appropriate cram-down interest rate for the debtor's proposed plan of reorganization. Testified at the bankruptcy proceeding on April 15, 2021.

Mid-Atlantic Finance Co., Inc., v. Prime Asset LLC, et al.

Cause No. D-1-GN-19-000954, in the District Court of Travis County, Texas, 250th Judicial District. Case is related to a misappropriation of trade secrets claim in the subprime auto loan industry. Testified at hearing on April 12, 2021, issued expert report on October 5, 2022 and rebuttal expert report on November 21, 2022.

In Re: Residential Capital LLC, et al Bankruptcy

Case Number 12-12020-mg, in the United States Bankruptcy Court for the Southern District of New York. Issued expert report on August 6, 2021 related to a breach of contract claim in the mortgage lending industry. Testified in deposition on October 28, 2021

Daniel Fishbaugh v. Art Bulgadarian et al.

Case No.: 2:20-dv-01135-JWH-RAO in the United States District Court Central District of California Western Division. Issued expert report on September 17, 2021 related to damages incurred by the plaintiff related to numerous causes of action, including copyright infringement, promissory fraud, unfair competition, and breach of contract.

Surveying and Mapping, LLC v. Dustin E. Trousil, et al.

Cause No.: D-1-GN-20-001527 in the United States District Court of Travis County, Texas, 261st Judicial District. Issued preliminary expert report on November 5, 2021. My report addressed damages incurred by the plaintiff related to numerous causes of action, including breach of contract, tortious interference, and misappropriation of trade secrets. Issued an affidavit in the matter on December 12, 2022.

Mary Evans, et al. v. Enterprise Products Partners, LP, et al.

Cause No.: 2019-57694 in the District Court of Harris County Texas, 165th Judicial District. Issued expert report on November 19, 2021. The report addressed issues of class certification related to dispute involving pipelines installed in residential neighborhoods. Provided deposition testimony on February 16, 2022.

Phage Diagnostics, Inc. v. Corvium, Inc.

C.A. No. N19C-07-200-MMJ[CCLD] in the Superior Court in the State of Delaware. Issued expert declaration on December 29, 2021 in a post-acquisition dispute involving technologies that detect food-borne bacteria, such as listeria and salmonella. Expert Reports issued on May 20, 2022 and June 22, 2022. Deposition testimony provided on July 14, 2022 and trial testimony provided on October 25, 2022.

Leon A. Malca v. Rappi, Inc.; Sebastian Mejia

C.A. No. 2020-0152-MTZ in the Court of Chancery in the State of Delaware. Issued expert report on March 18, 2022 in a shareholder dispute. The report addressed the valuation of a minority interest of a privately held company in the food delivery industry. I issued a response report on April 1, 2022.

National Polypropylene Consultants v. Panatecvh Dervices, S.A.

Arbitration. No. 215208 in the London Court of International Arbitration.

Issued expert report on June 17, 2022 in a fraud and breach of contract case involving drag reducing agents for oil and gas transmission. The report addressed benefit-of-the-bargain damages. I provided deposition testimony on July 27, 2022 and testified at arbitration on August 25, 2022.

Textron Innovations, Inc. v. SZ DJI Technology Co., LTD., et al.

Case No. RG19001604 in the United States District Court for the Western District of Texas, Waco Division. Issued expert report on December 8, 2022 regarding patent damages in a case involving drone technology and a supplemental report on January 19, 2023. Provided deposition testimony on January 24, 2023 and trial testimony on April 18, 2023.

Joshua Chodniewicz, et al. v. Art.com, Inc., et al.

Civil Action No. 6:21-cv-740 in the Superior Court of the State of California, County of Alameda. Issued expert report on February 1, 2023 regarding issues related to WALMART's acquisition of Art.com, including valuations and other financial analyses. Provided deposition testimony on March 24, 2023.

Blue Bottle Coffee, LLC v. Hui Chuan Liao, et al.

Case No. 3:21-cv-06083-CRB in the United States District Court for the Northern District of California. Issued expert report on May 22, 2023 that addressed brands and branding. Provided deposition testimony on July 26, 2023.

Pecos River Exploration Holdings, LLC et al. v. MBL Pecos River Exploration, LLC, et al.
AAA Case No. 01-23-0000-4266. Issued damages report on June 19, 2023 involving the valuation of E&P assets in the Permian Basin. Testified at arbitration on July 14, 2023.

Milton 635 Gravois Road, LLC, et al. v. TRT Holdings, Inc., et al.

Cause number DC-21-11406 in the District Court 44th Judicial District, Dallas County, TX. Issued report on September 25, 2023 involving damages related to alleged fraud in the real estate industry.

Cloud49, LLC v. Rackspace Technology, Inc., et al.

Civil Action number 1:22-cv-229 in the United States District Court for the Western District of Texas, Austin Division. Issued report on September 25, 2023 involving damages related to bid-rigging in the cloud technology services industry.

Sectra Communications AB, et al. v. Absolute Software, Inc. et al.

Case number 2:22-cv-00353-RSM in the United States District Court for the Western District of Washington, Seattle Division. Issued report on December 21, 2023 involving patent damages in a case about mobile VPN technology. Issued rebuttal report on April 12, 2024.

Advanced Micro Devices, Inc. v. Polaris Innovations, LTD.

Civil Action Number 1:23-cv-00304-DAE in the United States District Court for the Western District of Texas, Waco Division. Issued damages report in a breach of contract

and tortious interference case involving contractual licensing relationship between a semiconductor manufacturer and a patent holding company. Report issued on January 15, 2024.

The State of Texas v. Google, Inc.

Cause Number 22-01-88230 in the District Court of Victoria County Texas, 377th Judicial District. Issued expert report on January 16, 2024 addressing Deceptive Trade Practices Act (DTPA) penalties related to alleged violations regarding Google's Location and Incognito mode settings. Issued a supplemental disclosure and provided deposition testimony on May 24, 2024.

Fractus, S.A. v. ADT, LLC d/b/a ADT Security Services

Civil Action Number 2:22-cv-412 in the United States District Court for the Eastern District of Texas, Marshall Division. Issued expert report on March 25, 2024 addressing patent infringement damages related to antennae technology. Provided deposition testimony on April 3, 2024

LifeScan, Inc. v. Jeffrey C. Smith, et al.

Civil Action Number 2:17-cv-5552-CCC-JSA in the United States District Court for the District of New Jersey. Issued Expert report on April 15, 2024 addressing damages related to an alleged fraudulent scheme to take advantage of separate insurance regimes for blood glucose test strip products.

Roche Diagnostic Corp. et al v. Jeffrey C. Smith, et al.

Civil Action Number 2:19-cv-08761-CCC-JSA in the United States District Court for the District of New Jersey. Issued Expert report on April 15, 2024 addressing damages related to an alleged fraudulent scheme to take advantage of separate insurance regimes for blood glucose test strip products.

REPRESENTATIVE CASES

ANTITRUST MATTERS

Performed liability analysis related to an electricity market manipulation claim.

Analyzed liability and assessed damages in a restraint of trade case in the market for HVAC leak detectors. The case also involves claims of patent infringement and Lanham Act violations.

Performed economic damages analyses for a generic pharmaceutical company that was allegedly kept from entering a specific antibiotic market by the branded company through fraudulently obtained patent protection.

Analyzed liability and assessed damages associated with an alleged Resale Price Maintenance Agreement in the "cosmeceutical" industry.

Calculated antitrust damages related to price discrimination and fraud claims in the wholesale home furniture industry.

Examined economic issues related to alleged tying arrangements practiced by a medical device company.

Performed economic analysis related to a Section I and II claim in the laboratory airflow control systems market.

Examined a tying and bundling claim in the television broadcasting industry. Determined economic damages suffered by purchasers of ammonium nitrate due to price fixing.

Performed liability and economic damages analyses, as well as litigation support for an international client accused of collusion in the vitamins industry.

Performed liability and economic damages analyses and litigation support for an international client accused of collusion in the amino acids industry.

CORPORATE RECOVERY

Determined “cram-down” interest rate for bankruptcy proceeding involving commercial real estate company.

Valued a hotel property in Hawaii that was involved in a bankruptcy proceeding.

Performed a fraudulent transfer and preference analysis of the pre-petition transactions to determine avoidability, valued corporate assets, assessed litigation alternatives for additional recoveries, and reviewed debtors’ proposed business plan.

Conducted individual practice assessments, market surveys, and damage estimates associated with the failure of a physicians practice management company.

Performed financial analyses related to the pre-petition financing and collateral position of a Chapter 11 telecommunications company.

Analyzed investor claims of legal malpractice to assess recovery possibilities. Also, performed various financial analyses to determine the feasibility of class certification.

INTELLECTUAL PROPERTY

Engaged to quantify economic damages in a patent infringement case involving power converters for computer equipment.

Retained to quantify damages in a patent infringement matter involving drone technology.

Retained to quantify economic damages in a misappropriation of trade secrets case in the sub-prime auto loan industry.

Engaged to address Lanham Act damages in a Lanham Act dispute involving consumer products companies that manufacture and distribute air freshener products.

Engaged to address likelihood of confusion and damages in a trademark infringement dispute involving remote controlled vehicles.

Engaged to quantify damages in a Lanham act case involving false and misleading advertising claims in the timeshare industry.

Engaged to quantify damages to a hospital system resulting from fraud and negligent marketing claims against opioid manufacturers and distributors.

Assessed liability and quantified damages in a misappropriation of trade secrets dispute between two drilling fluids services firms.

Retained by defense counsel to opine on patent infringement damages in a matter involving technology for blade servers.

Engaged by defense counsel to opine on liability and damages in a trademark and trade dress litigation between two companies that manufacture beverage tumblers.

Quantified damages and opined on certain liability issues in a false advertising case involving two medical device companies who manufacture products for laparoscopic surgery.

Engaged to quantify damages and opine on liability issues in a trademark infringement matter involving the health benefits management industry.

Analyzed and rebutted confusion and dilution surveys performed by defense experts in a trademark dispute between a large oil company and a world-renowned entertainment company.

Engaged by plaintiff's counsel to quantify patent infringement damages in the computer software industry.

Evaluated the Plaintiff's damages claim and offered affirmative damages opinions in a breach of contract case involving the licensing of patented technology in the cosmeceutical industry.

Engaged by counsel for the defense to evaluate trademark infringement damages in a dispute between an international restaurant chain and a regional convenience store chain.

Engaged by counsel for the defense to evaluate liability and damages in a trademark infringement suit involving an online nostalgia company.

Quantified trademark infringement and false advertising damages in a dispute between two food products companies.

Determine patent infringement damages in a matter involving computer hardware technology.

Calculated damages in a misappropriation of trade secrets case between two computer software firms.

Provided business strategy and licensing assistance to the owner of an Internet patent portfolio.

Determined damages in a patent infringement case involving two “nutraceuticals” companies.

Assessed reasonable royalty and lost profits claim involving baseball training product.

Assessed lost profits and diminution of business value claims involving a misappropriation of trade secrets dispute between a start-up biotechnology firm and a nationally renowned research institution.

Assessed the amount of reasonable royalties due to patent infringement involving two air-jet weaving machine patents. Critiqued lost profits and reasonable royalties claimed by plaintiff.

Determined the amount of reasonable royalties due to patent infringement in the prepaid wireless telecommunications industry.

Engaged by plaintiff to assess lost profits damages for a company in the cardiac rhythm management business. Developed lost profits damages model, critiqued lost profits claimed by defendant, assisted in preparing for expert deposition and trial, and prepared prejudgment interest model and affidavit.

Assessed the amount of reasonable royalties due to patent infringement involving a patent for pet snacks.

VALUATION AND DAMAGES

Retained to quantify damages in an unfair competition case involving a multinational technology conglomerate.

Quantify damages in a breach of contract case involving drag-reducing agents for the oil and gas industry.

Determined damages in a breach of contract case between healthcare technology company and an insurance syndicate.

Engaged by counsel for the defense to value an oil and gas exploration and production company.

Valued natural gas salt-domed storage facility.

Valued natural gas pipeline facility.

Quantified damages in an arbitration dispute involving two joint venture partners in a natural gas trading and marketing business.

Provided cost of services testimony in a PUC rate case.

Engaged by plaintiff's counsel to opine on economic damages in a case involving the resale of underperforming residential mortgages.

Prepared intellectual property valuation for a company in the neuro-marketing field. The valuation report was used for acquisition purposes.

Engaged by defense counsel to provide class certification and damages opinions in a class action case involving ground water contamination.

Quantified class-wide damages for a case involving credit card interchange fees.

Performed valuation of a biotechnology company engaged in a breach of contract dispute involving preclinical and Phase I pharmaceuticals.

Assessed damages associated with breach of a natural gas processing and purchase contract. Determined well connection costs, well deliverability, well capacity, and compression maximums. Also, analyzed gains to producers from gaming nominations to pipelines.

Calculated the termination payment for a portfolio of interest rate swaps determined based on the Loss method as defined in the 1992 International Swaps and Derivatives Association Master Agreement.

Performed class certification analyses for defendant in a large class action lawsuit involving an oil spill in the Gulf Coast region. Work involved analysis of medical class, the Seafood Compensation Program, Property Damages Class, and other Economic Damages Classes.

Analyzed issues pertaining to a large family enterprise involved in an estate tax examination.

Valued a herd of full-blood, Japanese cattle as part of a damages analysis in a fraud and breach of contract case.

Assessed damages in a breach of contract case involving life settlement policies.

Calculated damages resulting from the withholding of restricted securities in association with an acquisition of a Phase I/Phase II biotechnology firm.

Valued investment advisory business involved in an administrative proceeding with the Securities and Exchange Commission.

Performed damages and liability analyses on a litigation matter involving terminations of interest rate swaps.

Performed a variety of complex analyses on a securities matter involving a large mortgage origination company. Our work entailed quantifying gains from insider trading, as well as analyzing various liability issues.

Provided analysis regarding the appropriate discount rate to employ in a damages calculation involving a failed pipe casing.

Assessed damaged and valued minority interest of a spirits manufacturer related to a post-acquisition dispute.

Provided economic and financial analysis to a large bank involved in a dispute regarding the bank's involvement in a loan syndicate. The dispute was related to the cable television industry.

Calculated personal injury damages due to a small business owner resulting from an automobile accident.

Performed econometric and financial analyses for the defendants in a large, securities class action case involving initial public offerings.

Calculated damages in a large 10B-5 litigation involving a document management technology and service company.

Assessed the real property value of a Hawaiian hotel involved in a bankruptcy related dispute.

Engaged to provide damages analysis in a 10B-5 litigation involving a defunct broadband company.

Performed valuation of derivative financial instruments in an Enron-related criminal matter.

Quantified damages for defense counsel in a large securities class action case involving a bankrupt energy company.

Calculated damages in a dispute involving nitrogen production units (NPU's) in the oil field services industry.

Performed damages analysis in a 10B-5 litigation involving a medical device firm.

Engaged by counsel for the defense to provide liability and damages opinions relative to a securities litigation involving derivative financial instruments.

Assessed mutual fund trading activities of alleged market timers and late traders for the SEC.

Performed analyses for the state of Texas to assist in analyzing proposed legislation regarding investment disclosure requirements.

Assessed damages due to a large airplane engine manufacturer resulting from faulty equipment produced by a sub-contractor.

Performed a business valuation of a hydroxides manufacturing unit for a multinational client in a breach of contract case.

Conducted damages analysis related to a post-merger dispute between a large express mail company and two of its European affiliates.

Conducted damage analyses related to alleged 10B5 securities violations by a large waste industry company.

Assessed stock and future earn out damages associated with claims of fraud and misrepresentations related to an acquisition of consumer car care products.

Assessed damages claim in a breach of contract case involving two parking services companies.

OTHER MATTERS

Engaged by major international company to perform econometric analyses on the Global Crude Oil Market.

Engaged by mortgage servicing company to determine its ability to pay fines levied against it by the Consumer Financial Protection Bureau (CFPB). The case related to illegal foreclosure practices.

Retained by the SEC in an administrative matter against the executives of a major mortgage servicing company. The engagement entailed evaluating loans for compliance with reps and warranties, as well as determining the gains made by the executives resulting from incorrect disclosures.

Performed analysis regarding the quality of due diligence conducted in a transaction involving a major international restaurant company. The plaintiff, a joint venture partner responsible for West Coast franchise expansion, sued the restaurant chain and its acquirers for breach of contract and fraud.

Performed analyses regarding corporate governance issues for a large accounting firm involved in a litigation case that alleged accounting malpractice.

Retained by a trustee for a mortgage-backed securities structured trust to determine whether mortgage loans in a trust complied with the representations and warranties made about the loans in loan purchase agreements.

Assisted a large national insurance carrier in the divestiture of its healthcare practice.

Performed Y2K readiness assessments on behalf of state insurance regulatory boards.

Managed an engagement to eliminate a large claims backlog for an insolvent insurance carrier.

Retained by trustee to examine a mortgage origination company's policies and practices in the areas of mortgage loan underwriting and mortgage loan sales, as well as its policies and practices related to quality control and quality assurance in these areas.

Helped the City of Pittsburgh value its parking assets and evaluate various alternatives for monetizing them to fund the city's pension shortfall.

Retained by GSE (Government Sponsored Entity) to evaluate its risk management policies and procedures related to its mortgage purchasing activities. In the case, the GSE sued a Big 4 accounting firm for failing to detect fraud at a now defunct mortgage bank during its audits.

Retained by Plaintiff counsel to evaluate class-certification issues in multiple mortgage-backed securities cases.

Materials Relied Upon

Legal Filings

Fourth Amended Complaint in State of Texas et al. vs. Google LLC, In Re: Google Digital Advertising Antitrust Litigation, Civil Action No. 1:21-cv-06841-PKC, May 5, 2023

Defendant Google LLC's Responses and Objections to Plaintiffs' Second Set of Interrogatories, April 8, 2024

Defendant Google LLC's First Amended Responses and Objections to Plaintiffs' Third Set of Interrogatories, May 24, 2024

Case Law

Brown et al. v. Google LLC, Plaintiffs' Unopposed Motion for Final Approval of Class Action Settlement (April 1, 2024)

Halo Electronics, Inc. v. Pulse Electronics, Inc. 579 U.S. (2016)

Office Of The Att'y Gen., State Of Florida, Dep't Of Legal Affairs v. All USA Van Lines Inc., No. CACE18029679 (Fla. 17th Cir. Ct. May 20, 2022)

Rohrer v. Knudson, 203 P.3d 759 (Mont. 2009)

Spradling v. Williams, 566 S.W.2d 561 (Tex. 1978)

State ex rel. Nixon v. Consumer Auto. Res., Inc., 882 S.W.2d 717, 722 (Mo. Ct. App. 1994)

State ex rel. Wilson v. Ortho-McNeil-Janssen Pharm., Inc., 777 S.E.2d 176, 203 (S.C. 2015)

United States v. Phelps Dodge Indus., Inc., 589 F. Supp. 1340, 1362 (S.D.N.Y. 1984)

Depositions

Deposition of [REDACTED], March 31, 2021

Deposition of [REDACTED], August 15, 2023

Declarations

Declaration of [REDACTED], August 4, 2023

Declaration of [REDACTED], August 5, 2023

Declaration of [REDACTED], May 24, 2024

State Laws

Alaska Unfair Trade Practices and Consumer Protection Act, available at <https://www.akleg.gov/basis/statutes.asp#45.50.561>

Arkansas Code § 4-88-107, available at <https://law.justia.com/codes/arkansas/2020/title-4/subtitle-7/chapter-88/subchapter-1/section-4-88-107/>

Arkansas Code § 4-88-113, available at <https://law.justia.com/codes/arkansas/2020/title-4/subtitle-7/chapter-88/subchapter-1/section-4-88-113/>

Florida Statutes 2023, available at http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0500-

Idaho Consumer Protection Act, available at <https://legislature.idaho.gov/statutesrules/idstat/title48/t48ch6/>

Idaho Rules of Consumer Protection, available at <https://adminrules.idaho.gov/rules/current/04/040201.pdf>

Indiana Deceptive Consumer Sales Act, available at <https://law.justia.com/codes/indiana/2022/title-24/article-5/chapter-0-5/section-24-5-0-5-3/>

Kentucky Revised Statutes, available at <https://apps.legislature.ky.gov/law/statutes/statute.aspx?id=34914>

Louisiana Unfair Trade Practices and Consumer Protection Law, available at <https://legis.la.gov/Legis/Law.aspx?d=104031>

Mississippi Consumer Protection Act, available at <https://law.justia.com/codes/mississippi/2020/title-75/chapter-24/subchapter->

Missouri Statute 407.020, available at <https://revisor.mo.gov/main/OneSection.aspx?section=407.020&bid=48371>

Missouri Statute 407.100, available at <https://revisor.mo.gov/main/OneSection.aspx?section=407.100&bid=23016>

Montana Code Annotated, available at https://leg.mt.gov/bills/mca/title_0300/chapter_0140/part_0010/section_0020/0300-0140-0010-0020.html

Nevada Revised Statutes 598.0915-598.0925, available at <https://www.leg.state.nv.us/nrs/NRS-598.html#NRS598Sec0999>

Nevada Revised Statutes 598.0999, available at <https://www.leg.state.nv.us/nrs/NRS-598.html#NRS598Sec0999>

North Dakota Century Code, available at <https://ndlegis.gov/cencode/t51c15.pdf#nameddest=51-15-11>

Puerto Rico Laws 10 L.P.R.A. , available at <https://casetext.com/statute/laws-of-puerto-rico/title-ten-commerce/subtitle-1-regulation-of-business-generally/chapter-13-monopolies-and-restraint-of-trade/259-fair-competition>

South Carolina Unfair Trade Practices Act, available at <https://www.scstatehouse.gov/code/t39c005.php>

South Dakota Codified Laws, available at <https://sdlegislature.gov/Statutes/37-24>

Texas Deceptive Trade Practices Act, available at <https://statutes.capitol.texas.gov/Docs/BC/htm/BC.17.htm>

15 U.S. Code § 15

18 U.S. Code § 1964

35 U.S. Code § 284

Utah Consumer Sales Practices Act 13-11-17, available at https://le.utah.gov/xcode/Title13/Chapter11/C13-11_1800010118000101.pdf

Utah Consumer Sales Practices Act 13-11-4, available at https://le.utah.gov/xcode/Title13/Chapter11/C13-11_1800010118000101.pdf

Expert Reports

Expert Report of Dr. John Chandler, June 7, 2024

Expert Report of Dr. Joshua Gans, June 7, 2024

Expert Report of Dr. Matthew Weinberg, June 7, 2024

Academic Literature

Berk and DeMarzo, Corporate Finance, 3rd Edition

Boushie, Kristopher A., et al. Calculating and Proving Damages. Law Journal Press, 2011, §1.04[1] at 1-9, §9.10[1] at 9-40

Brealey, Richard A., Myers, Stewart C., and Allen, Franklin, Principles of Corporate Finance, McGraw-Hill/Irwin, Tenth Edition: 2011

Carolyn Carter, Consumer Protection in the States: A 50-State Evaluation of Unfair and Deceptive Trade Practices Laws, National Consumer Law Center, March 2018, available at https://www.nclc.org/wp-content/uploads/2022/09/UDAP_rpt.pdf, accessed 6/4/2024

Choi, Hana et al., "Online Display Advertising Markets: A Literature Review and Future Directions," Information Systems Research 31:2 (2020)

Evans, David S. and Richard Schmalensee, "The Antitrust Analysis of Multisided Platform Businesses" in Oxford Handbook of International Antitrust Economics, Volume 1 (2015)

Pratt, Reilly, Schweih, Valuing a Business, McGraw-Hill Irwin, Third Edition: 1996

Ross, Westerfield, Bradford, Fundamental of Corporate Finance McGraw-Hill Irwin, 9th edition

Weil, Roman L. et al. Litigation Services Handbook The Role of the Financial Expert, John Wiley & Sons, Inc. 2012, Fifth Edition

Journals

J. Gregory Sidak, Rethinking Antitrust Damages, 33 STAN. L. REV. 329, 330 (1981), available at https://www.criterioneconomics.com/docs/rethinking_antitrust_damages1.pdf

Judith A. Morse, Treble Damages under RICO: Characterization and Computation, 61 Notre Dame L. Rev. 526 (1986)

Financials

Alphabet Inc. Form 10-Ks for fiscal years ending 2016 – 2023

Alphabet Inc., Q1 2024 Earnings Call, Apr 25, 2024

Google Inc., Form 10-Ks for fiscal years ended December 31, 2009 through December 31, 2015

Articles & Websites

"Digital ad spend worldwide to pass \$600 billion this year", Emarketer (Jul 14, 2023), available at <https://www.emarketer.com/content/digital-ad-spend-worldwide-pass-600-billion-this-year>.

"How Open Bidding Works," Google Ad Manager, November 20, 2019, available at <https://web.archive.org/web/20191120001210/https://support.google.com/admanager/answer/7128958>

"About Google," available at https://about.google/intl/ALL_us/

"Ads and Data," Google Safety Center, available at <https://safety.google/privacy/ads-and-data/>

Digital Advertising in the United States – statistics & facts, Statista (December 18, 2023), Digital ad spend worldwide to pass \$600 billion this year, eMarketer (July 14, 2023), <https://www.statista.com/topics/1176/online-advertising/#editorsPicks>

"Display Advertising," Jargon Buster IAB UK, available at <https://www.iabuk.com/jargon-buster?op=Apply&title=display>

DOJ's Ad Tech Antitrust Case Against Google: A Brief Overview, Congressional Research Service Legal Sidebar (May 5, 2023), <https://crsreports.congress.gov/product/pdf/LSB/LSB10956>

"DSP, SSP, and Ad Exchange: What's the Difference?," Mountain, available at <https://mountain.com/blog/dsp-ssp-ad-exchange/>

First-Party Ad Server vs. Third-Party Ad Server, Playwire, available at <https://www.playwire.com/blog/first-party-ad-server-vs-third-party-ad-server>

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Google Ad Manager "Smarter optimizations to support a healthier programmatic market," May 12, 2016, available at <https://blog.google/products/admanager/smarter-optimizations-to-support/>

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"Google Establishes Alphabet Holding Company," Wall Street Journal, October 2, 2015, available at <https://www.wsj.com/articles/google-to-establish-alphabet-holding-company-after-close-of-trading-friday-1443801447>

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Letter from Freshfields Bruckhaus, Deringer US LLP dated May 24, 2024 "Re: State of Texas et al. v. Google LLC, No. 4:20-cv-957-SDJ (E.D. Tex.)"

Bates Numbered Documents

GOOD-AT-MDL-00399609	GOOG-AT-MDL-DATA-000066537-482007	GOOG-DOJ-AT-02634336
GOOG-AT-MDL-000017381	GOOG-AT-MDL-DATA-000508827-58886	GOOG-DOJ-AT-02641400
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All materials cited in this report and exhibits.

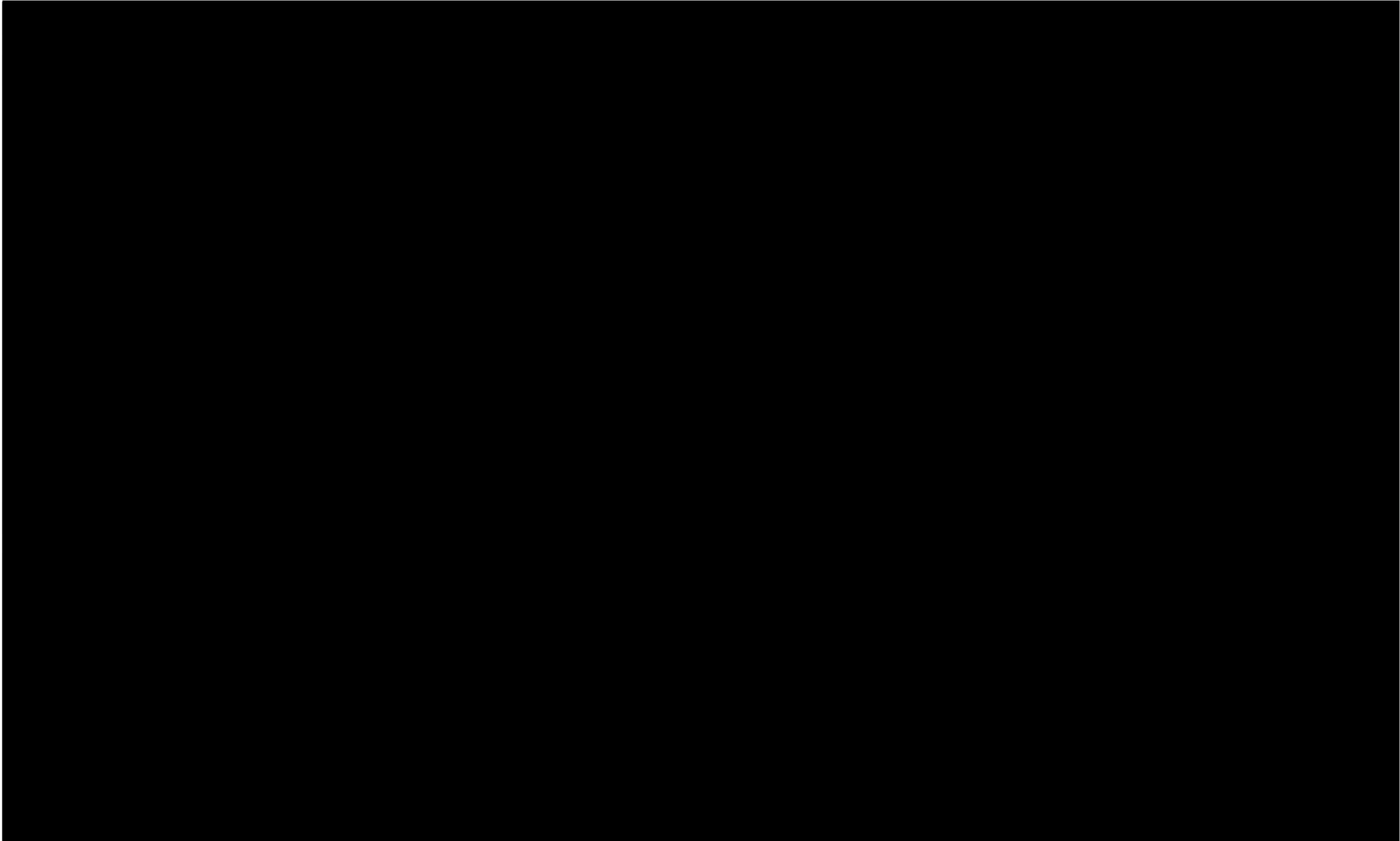
I have been provided access to the document database as well as all depositions related to this litigation.

**Ratio of State Internet Population to U.S. Internet Population
2013 - 2023**

State	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Alaska	0.22%	0.23%	0.25%	0.24%	0.23%	0.23%	0.23%	0.23%	0.22%	0.22%	0.22%
Arkansas	0.80%	0.79%	0.78%	0.81%	0.81%	0.83%	0.85%	0.82%	0.87%	0.87%	0.87%
Florida	5.69%	5.76%	6.37%	6.36%	6.42%	6.52%	6.58%	6.53%	6.60%	6.72%	6.72%
Idaho	0.52%	0.51%	0.52%	0.51%	0.52%	0.54%	0.56%	0.56%	0.58%	0.59%	0.59%
Indiana	2.03%	2.02%	1.98%	2.00%	2.00%	2.00%	1.99%	2.00%	2.03%	2.03%	2.03%
Kentucky	1.31%	1.29%	1.28%	1.31%	1.30%	1.31%	1.31%	1.30%	1.31%	1.32%	1.32%
Louisiana	1.30%	1.27%	1.31%	1.32%	1.30%	1.31%	1.32%	1.30%	1.32%	1.29%	1.29%
Mississippi	0.75%	0.76%	0.74%	0.80%	0.81%	0.82%	0.81%	0.79%	0.81%	0.82%	0.82%
Missouri	1.84%	1.82%	1.82%	1.84%	1.83%	1.83%	1.84%	1.81%	1.83%	1.82%	1.82%
Montana	0.31%	0.30%	0.32%	0.31%	0.32%	0.32%	0.32%	0.32%	0.33%	0.33%	0.33%
Nevada	0.87%	0.87%	0.92%	0.90%	0.91%	0.94%	0.93%	0.94%	0.95%	0.96%	0.96%
North Dakota	0.23%	0.23%	0.23%	0.23%	0.23%	0.22%	0.23%	0.23%	0.23%	0.23%	0.23%
Puerto Rico	0.67%	0.66%	0.73%	0.78%	0.76%	0.72%	0.78%	0.76%	0.84%	0.86%	0.86%
South Carolina	1.33%	1.33%	1.39%	1.45%	1.47%	1.49%	1.50%	1.48%	1.52%	1.55%	1.55%
South Dakota	0.27%	0.26%	0.26%	0.26%	0.26%	0.26%	0.27%	0.26%	0.26%	0.27%	0.27%
Texas	8.38%	8.40%	8.29%	8.52%	8.67%	8.70%	8.81%	8.80%	8.89%	9.04%	9.04%
Utah	1.02%	1.04%	1.01%	0.99%	1.00%	1.02%	1.03%	1.04%	1.04%	1.04%	1.04%
Total	27.54%	27.55%	28.19%	28.63%	28.83%	29.07%	29.35%	29.18%	29.63%	29.96%	29.96%

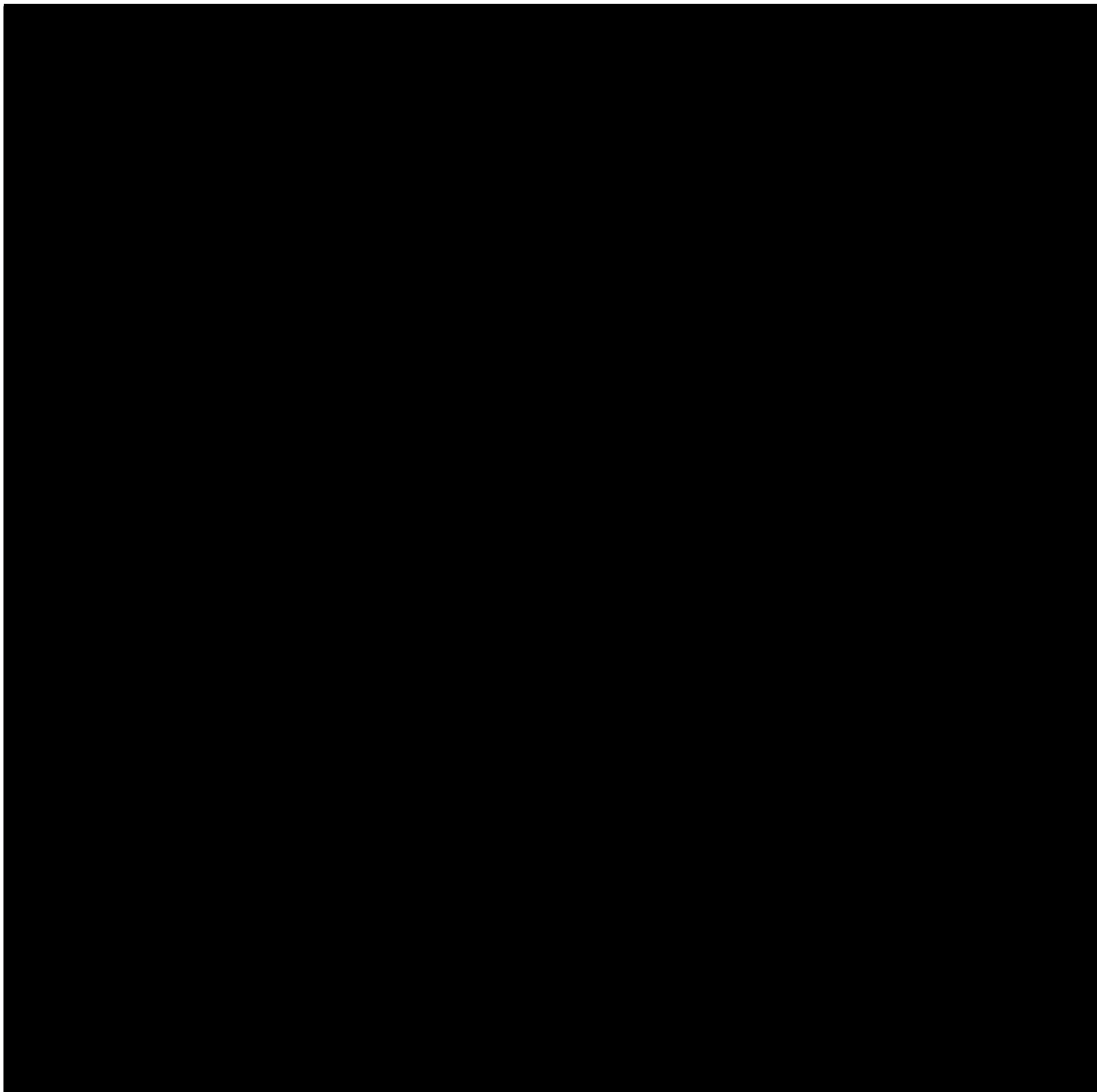
Notes: I apply 2022 ratios to 2023 as the U.S. Census Bureau has not yet released 2023 ACS data.

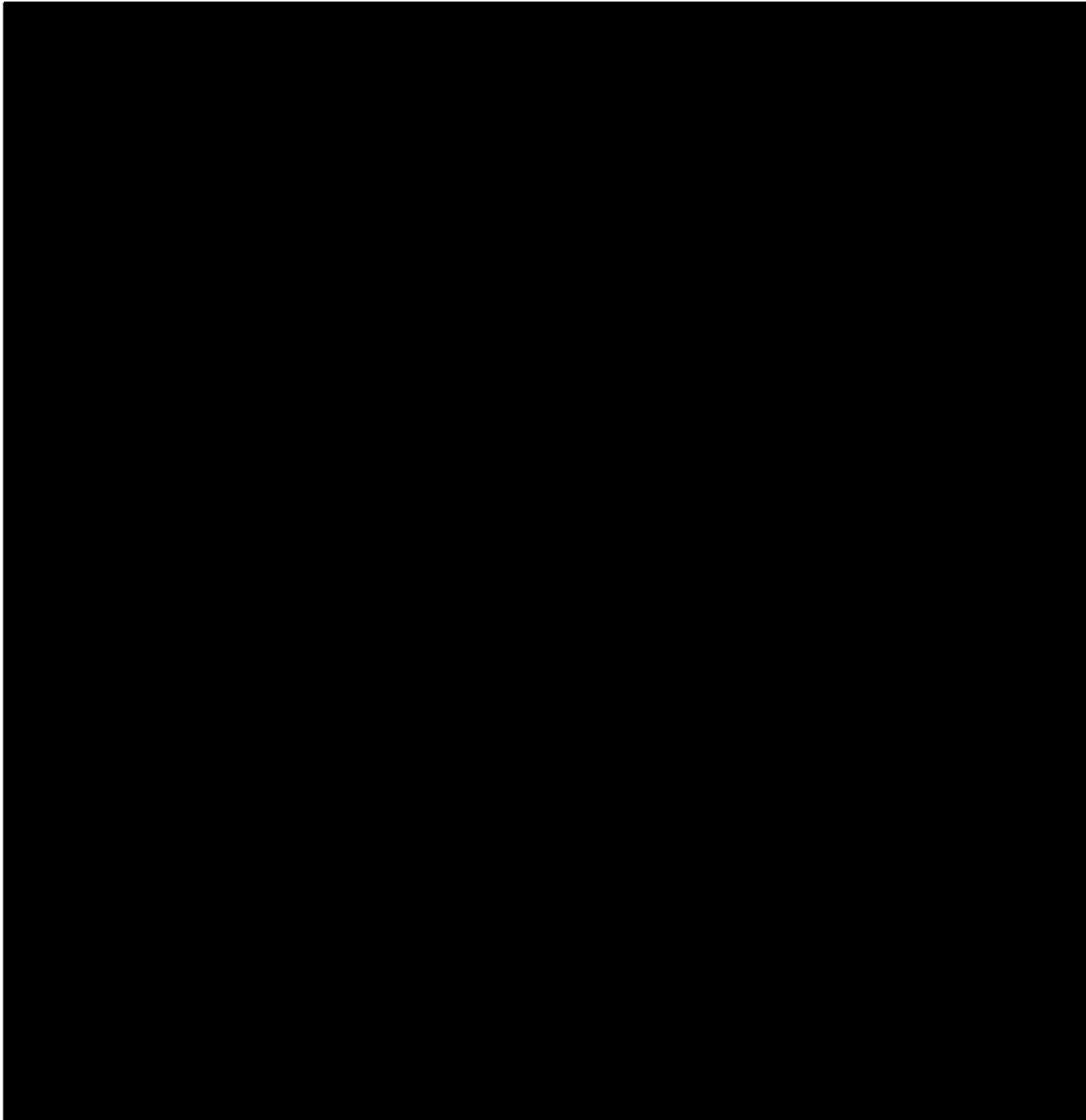
Sources: U.S. Census Bureau Population Estimates and American Community Survey (ACS).



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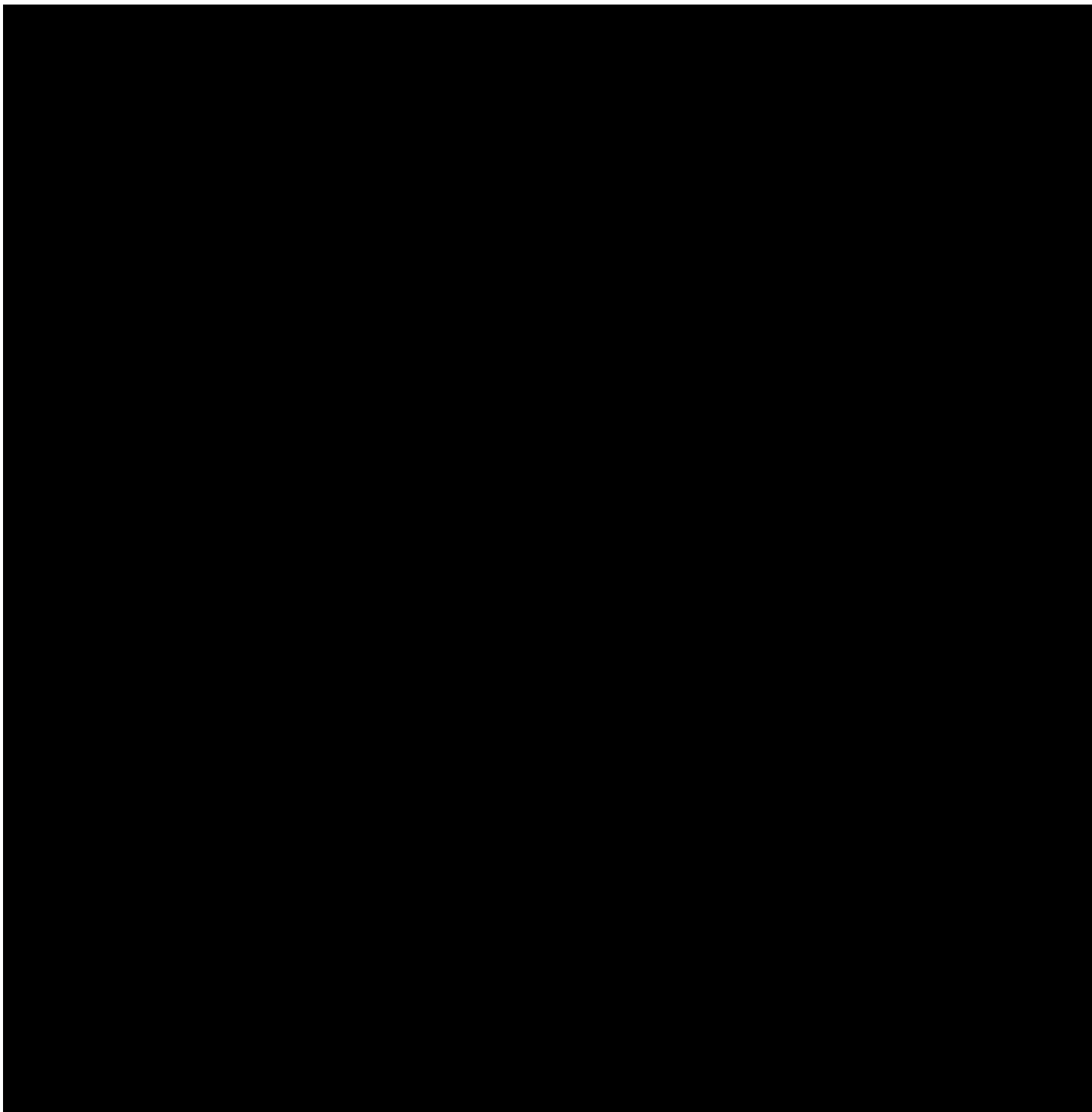
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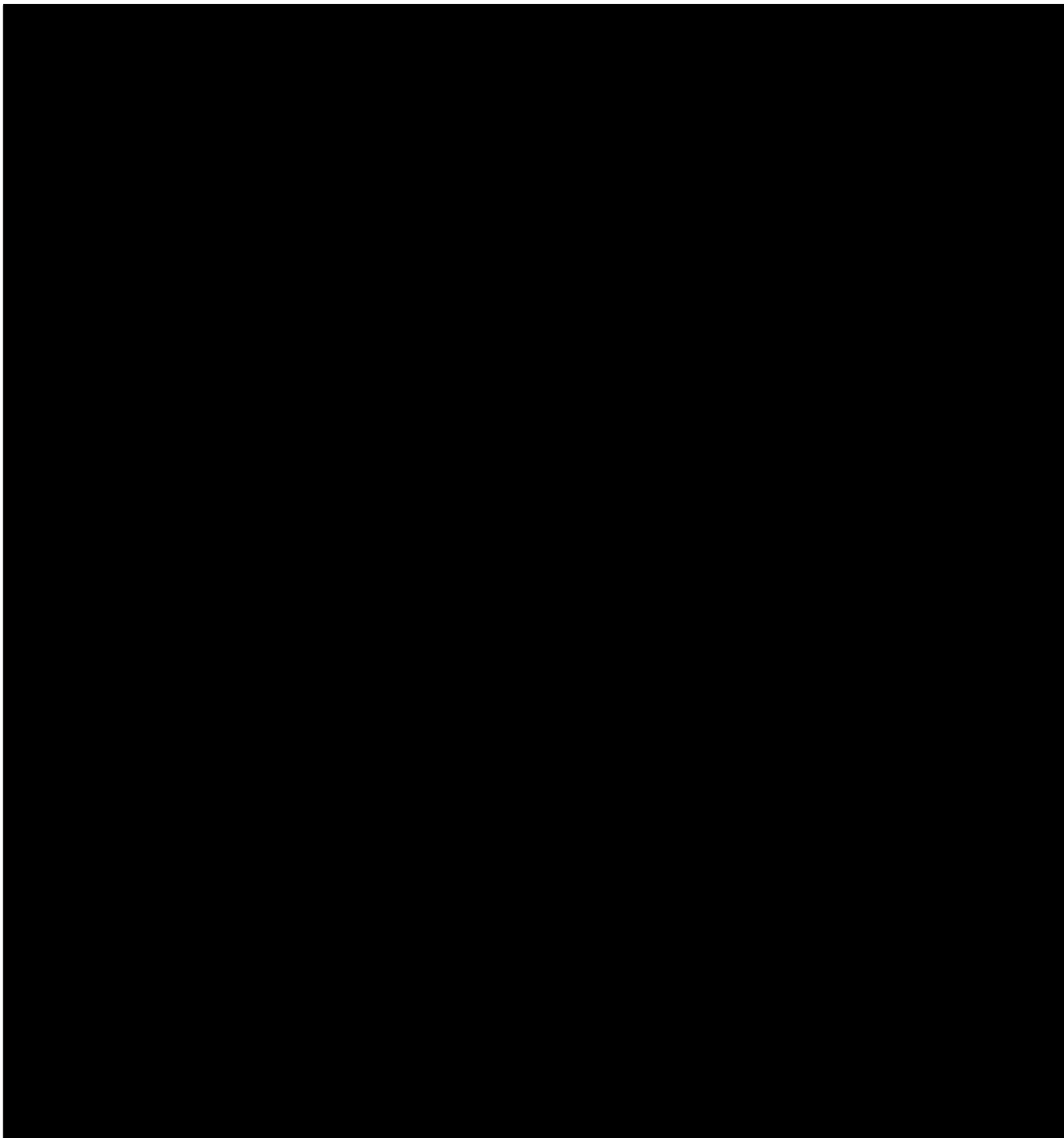




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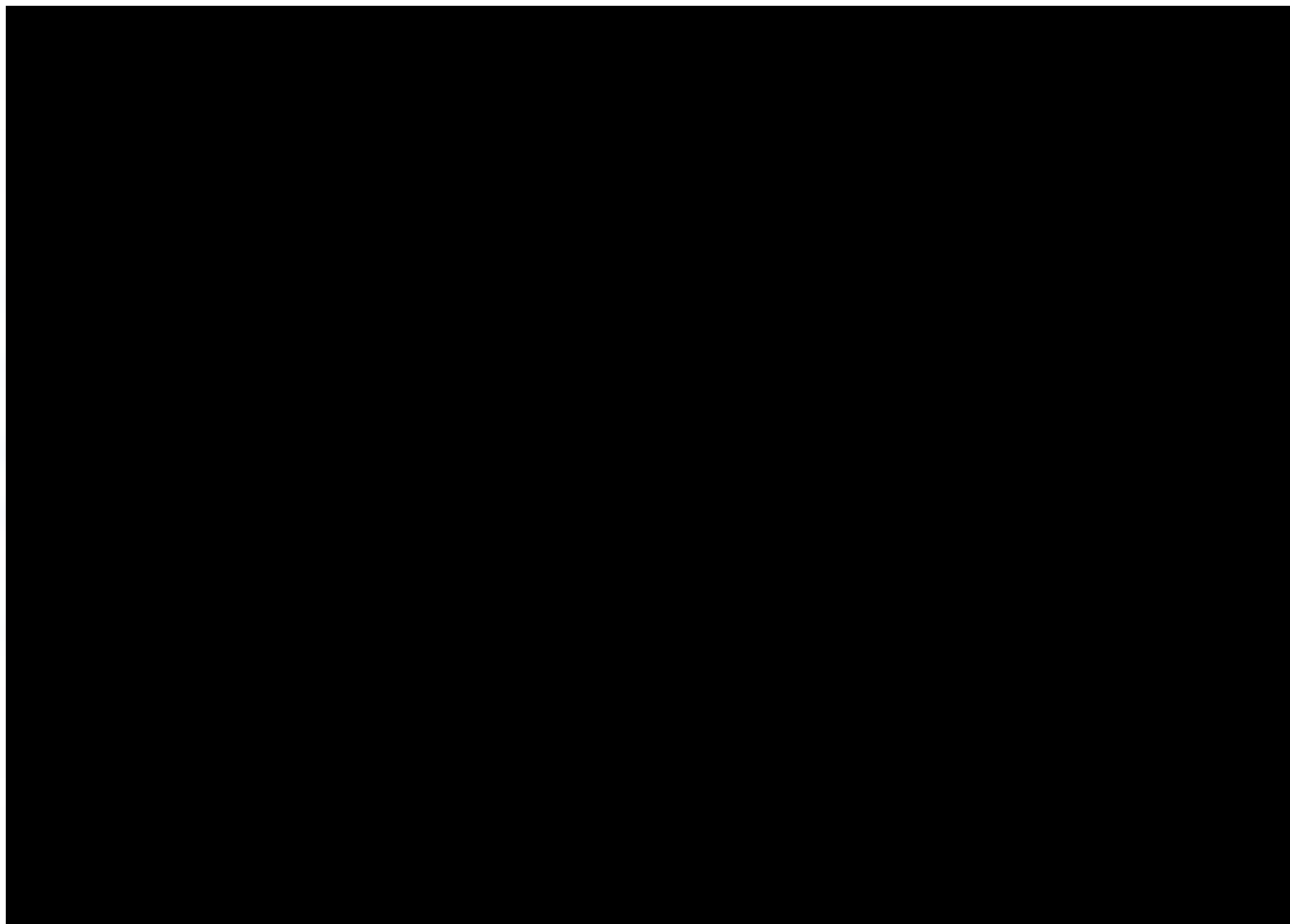
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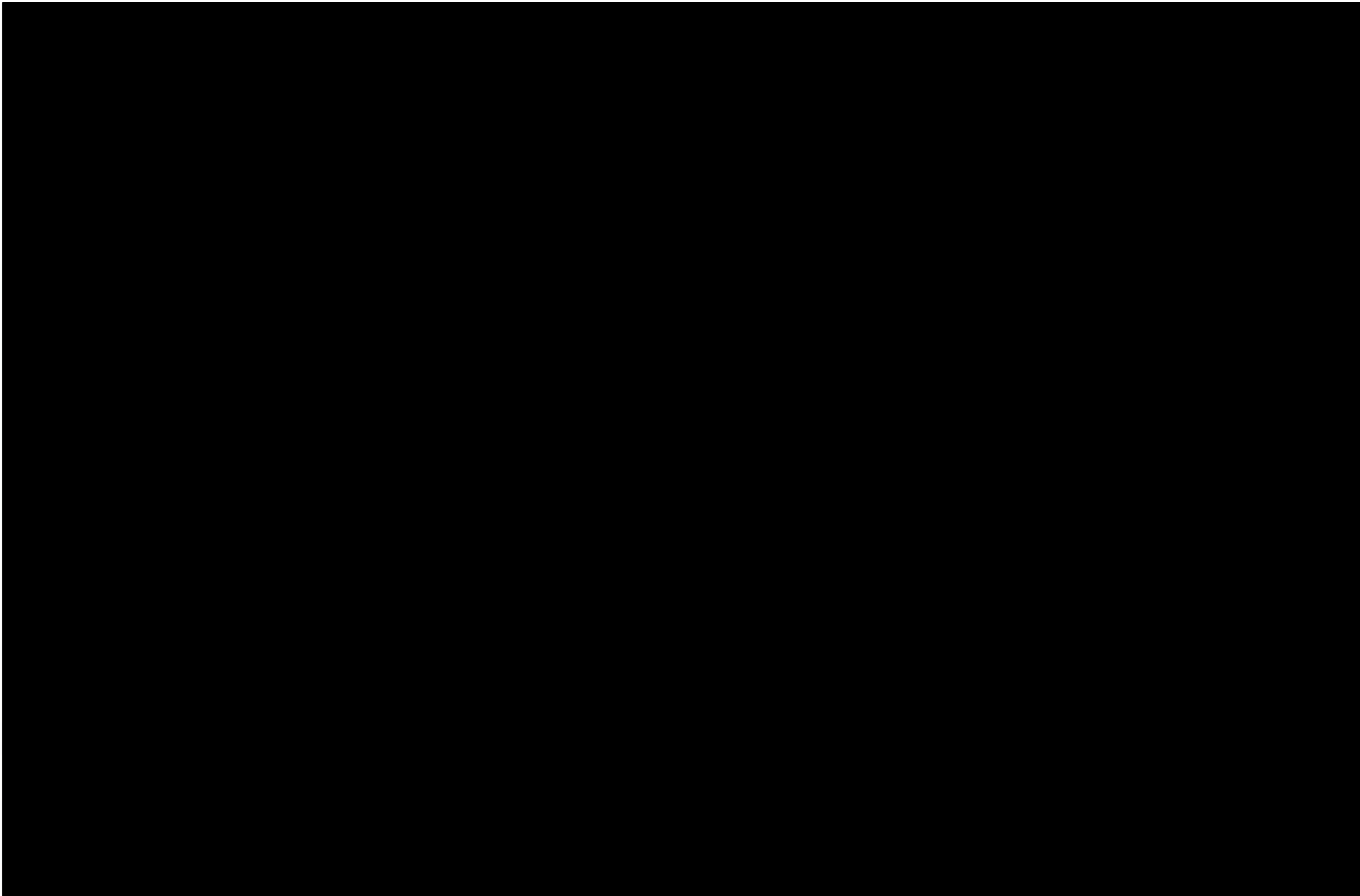


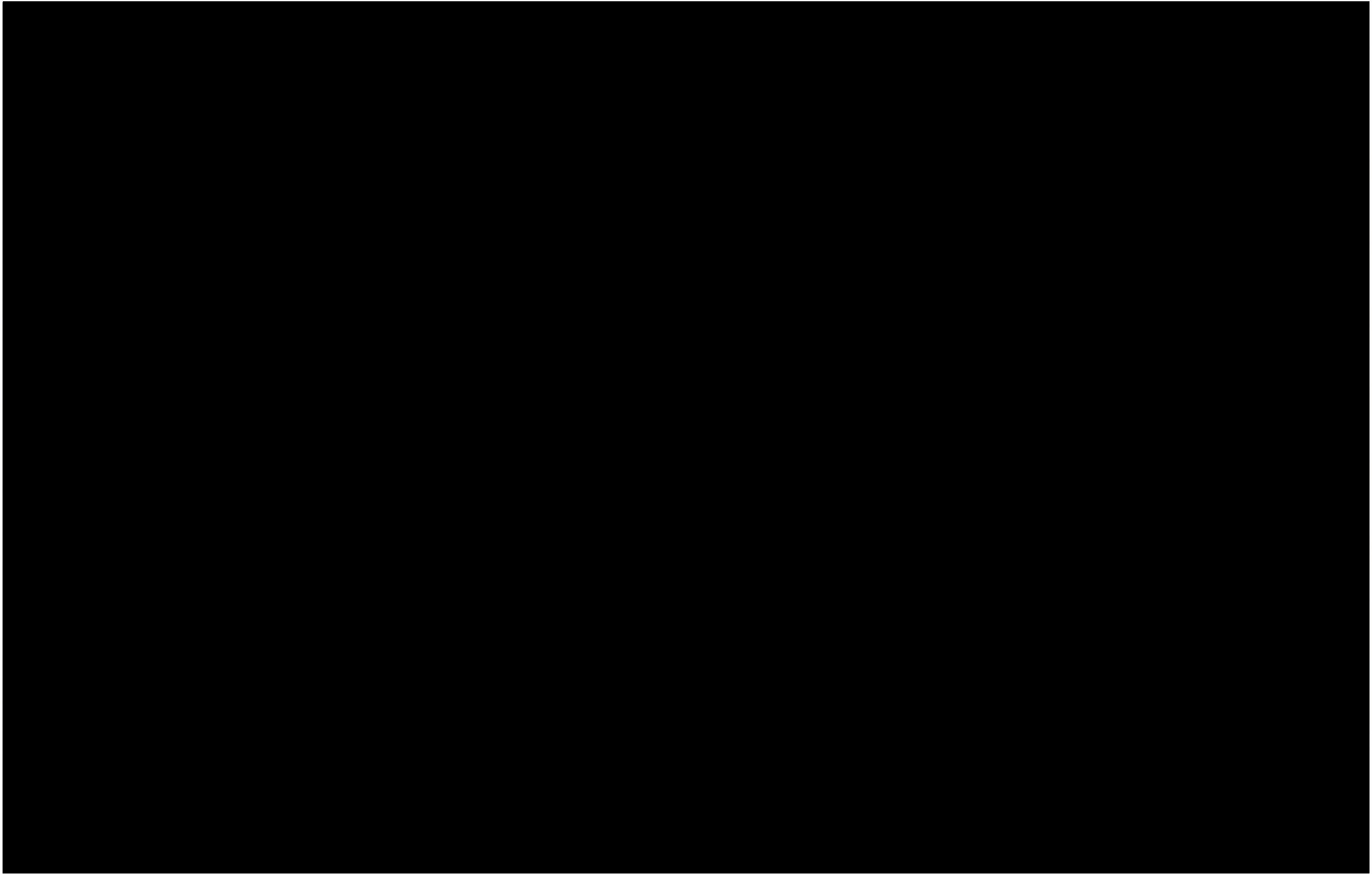


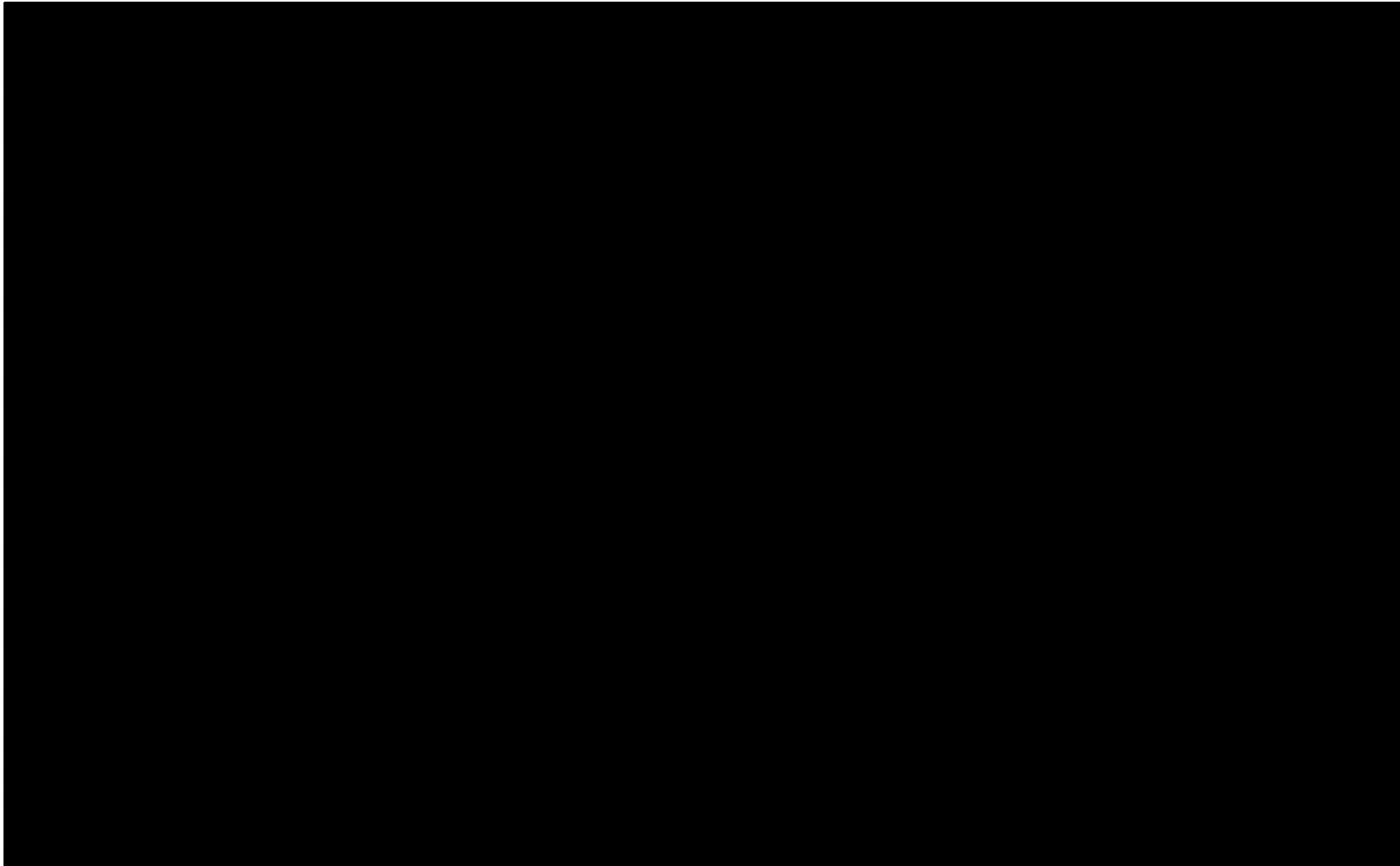
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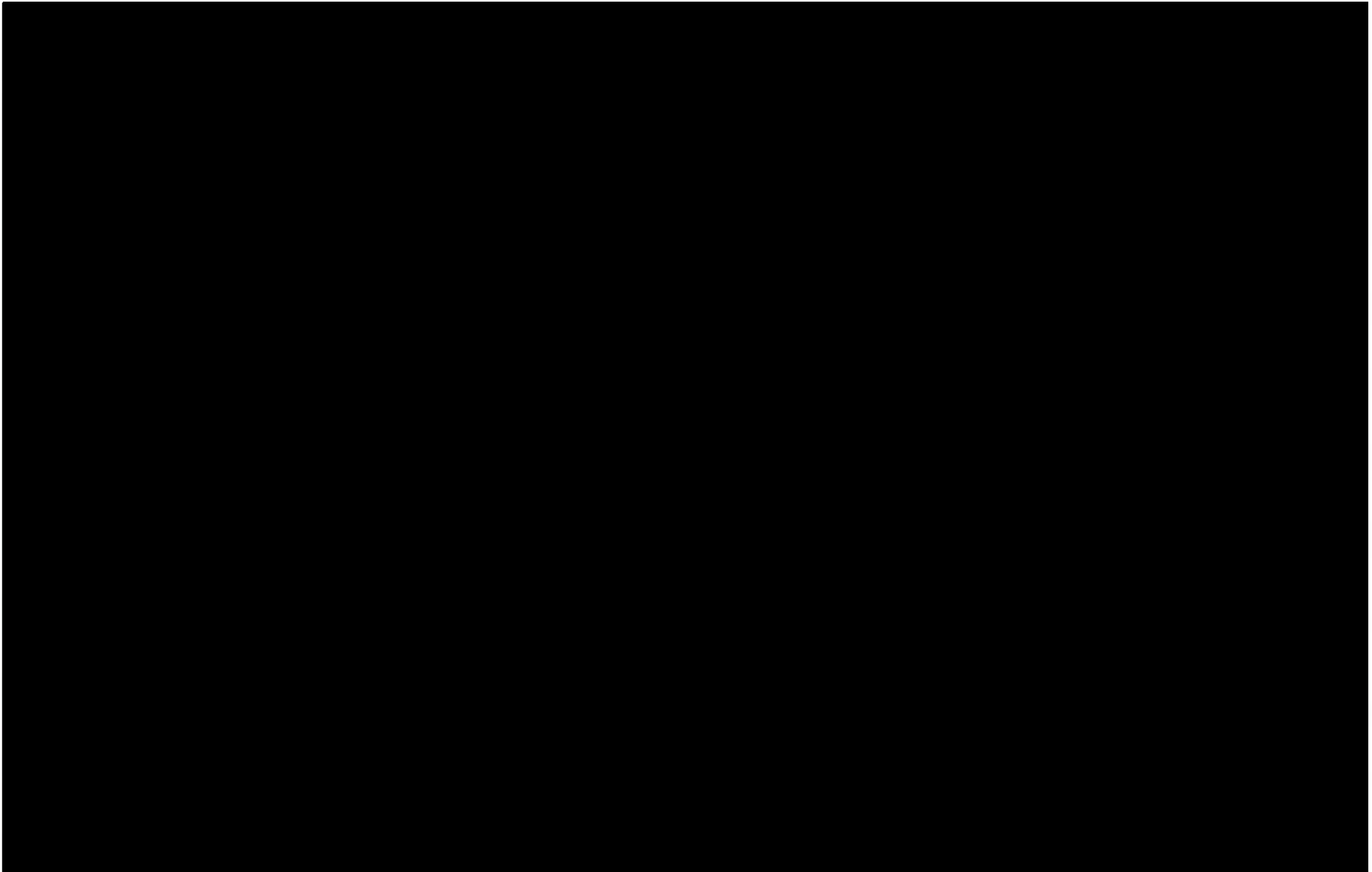
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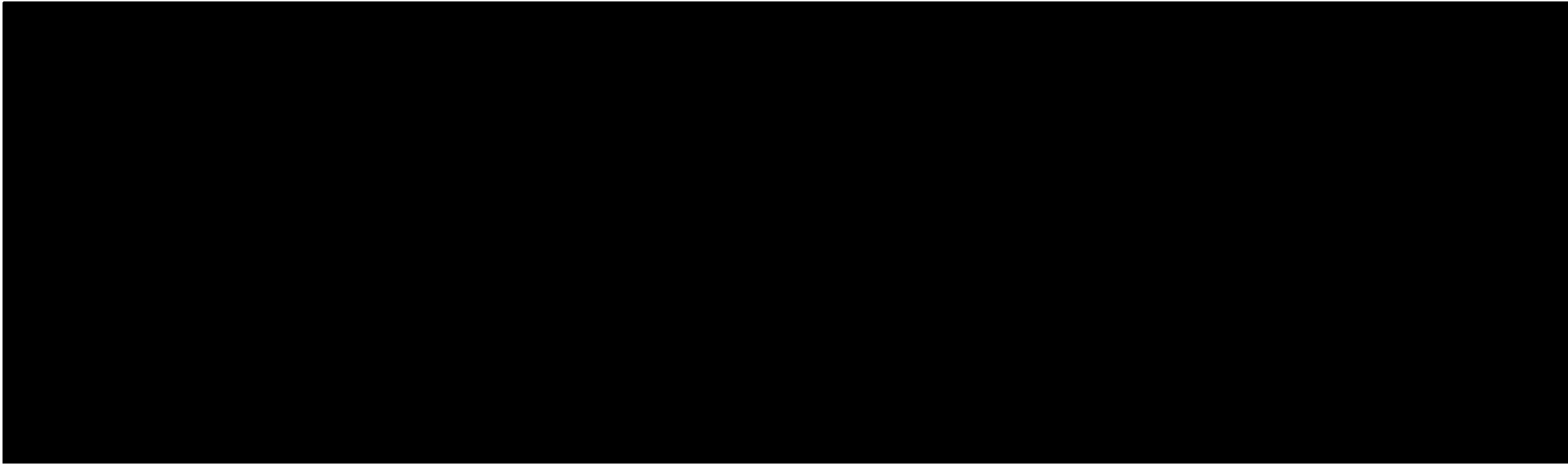


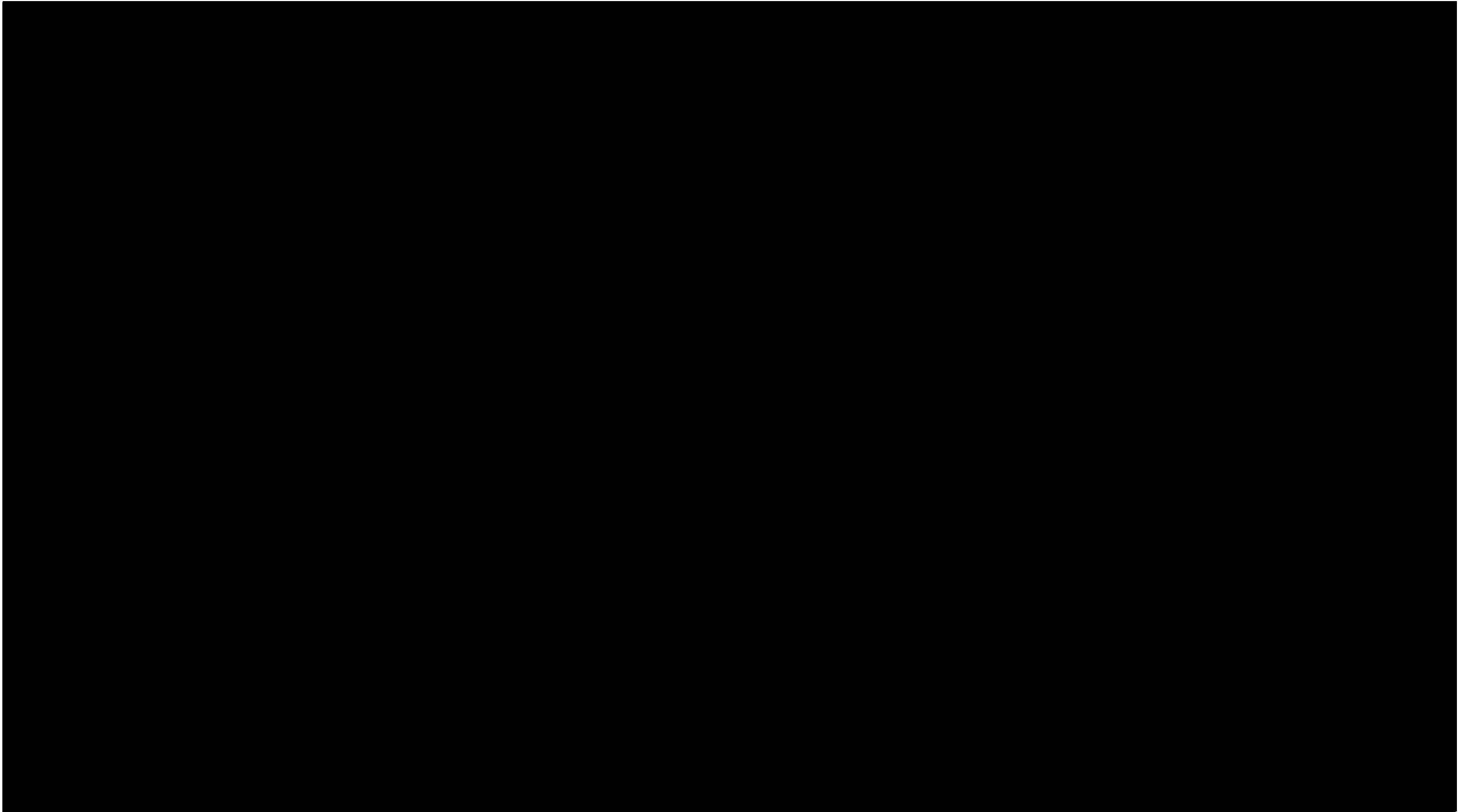






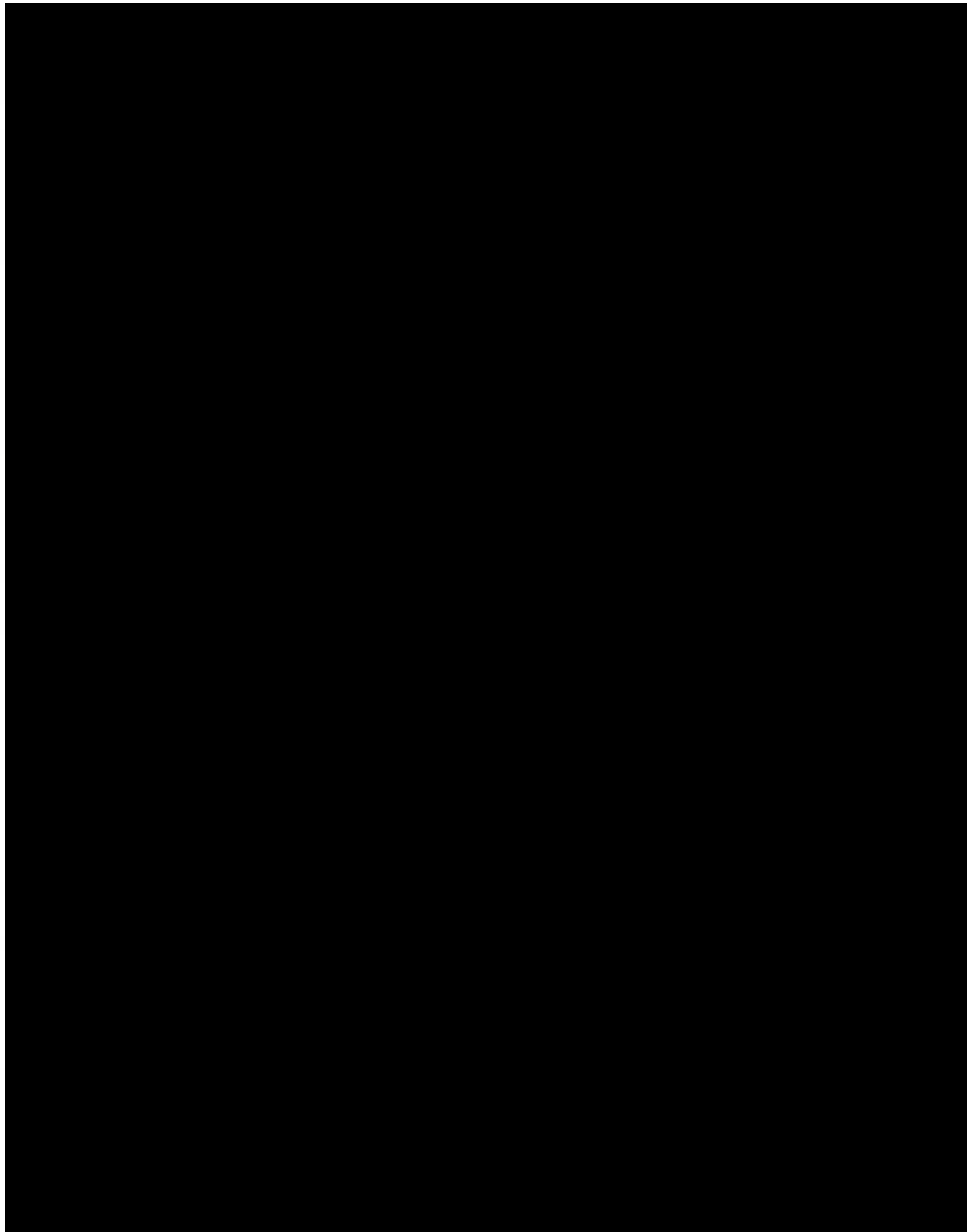


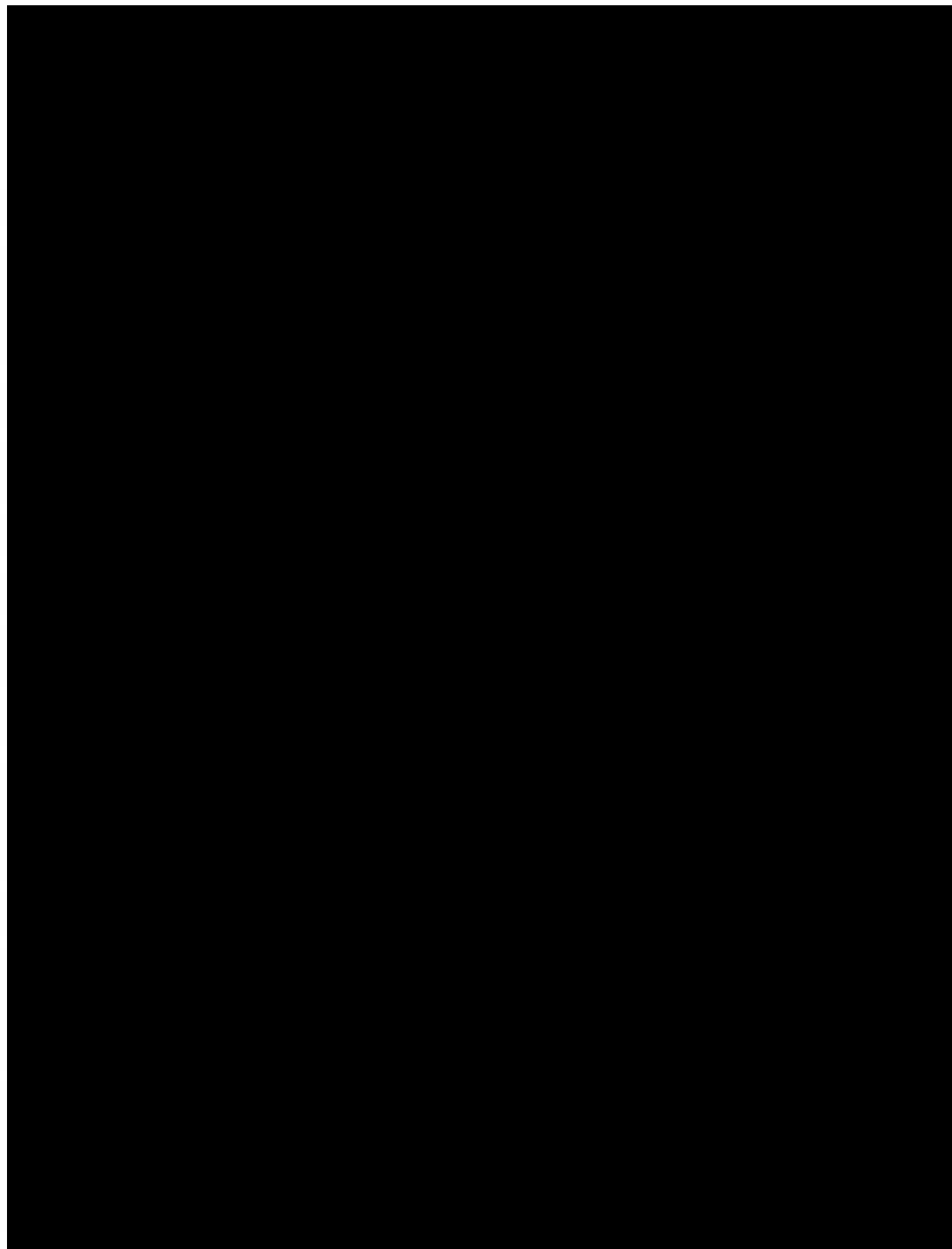




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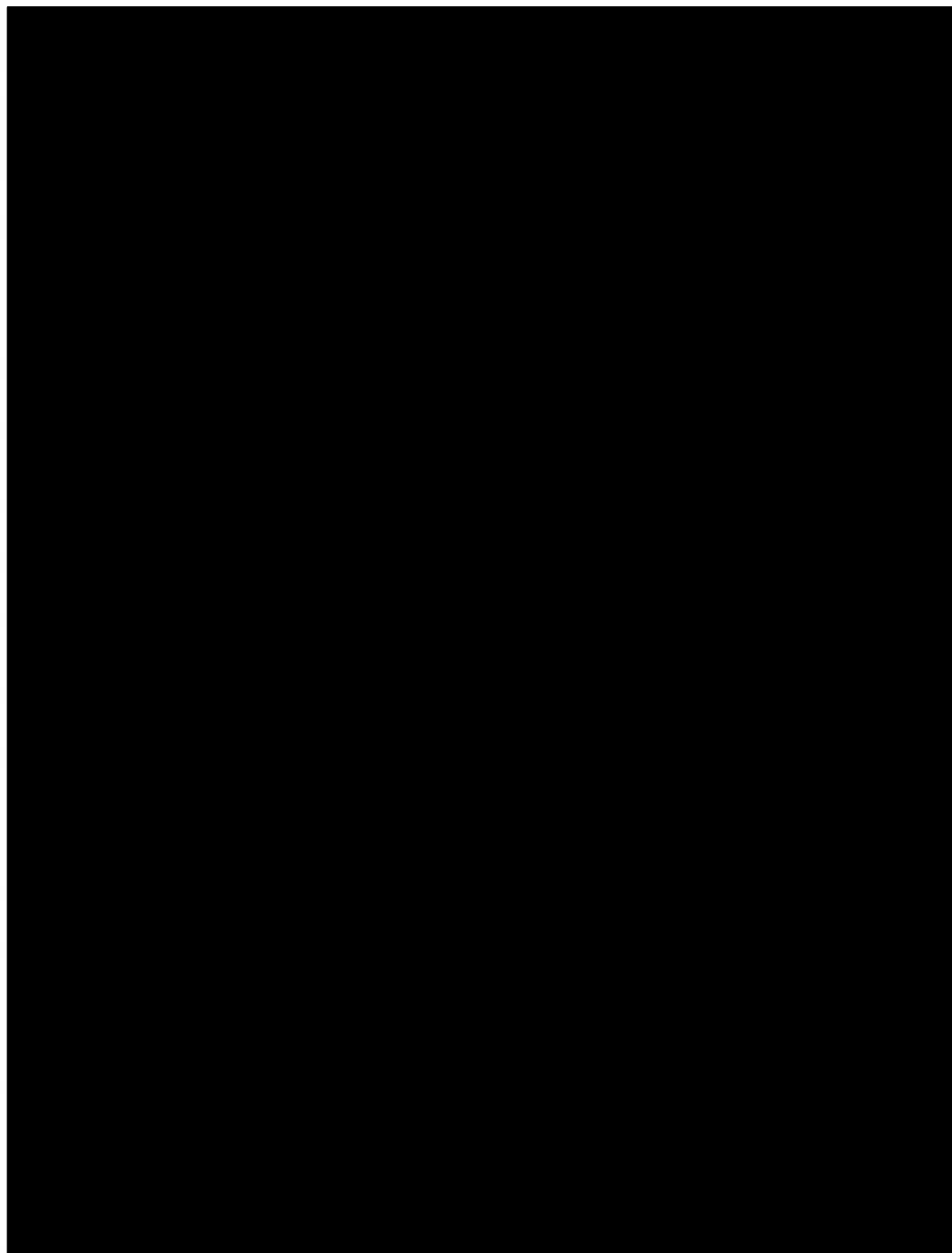
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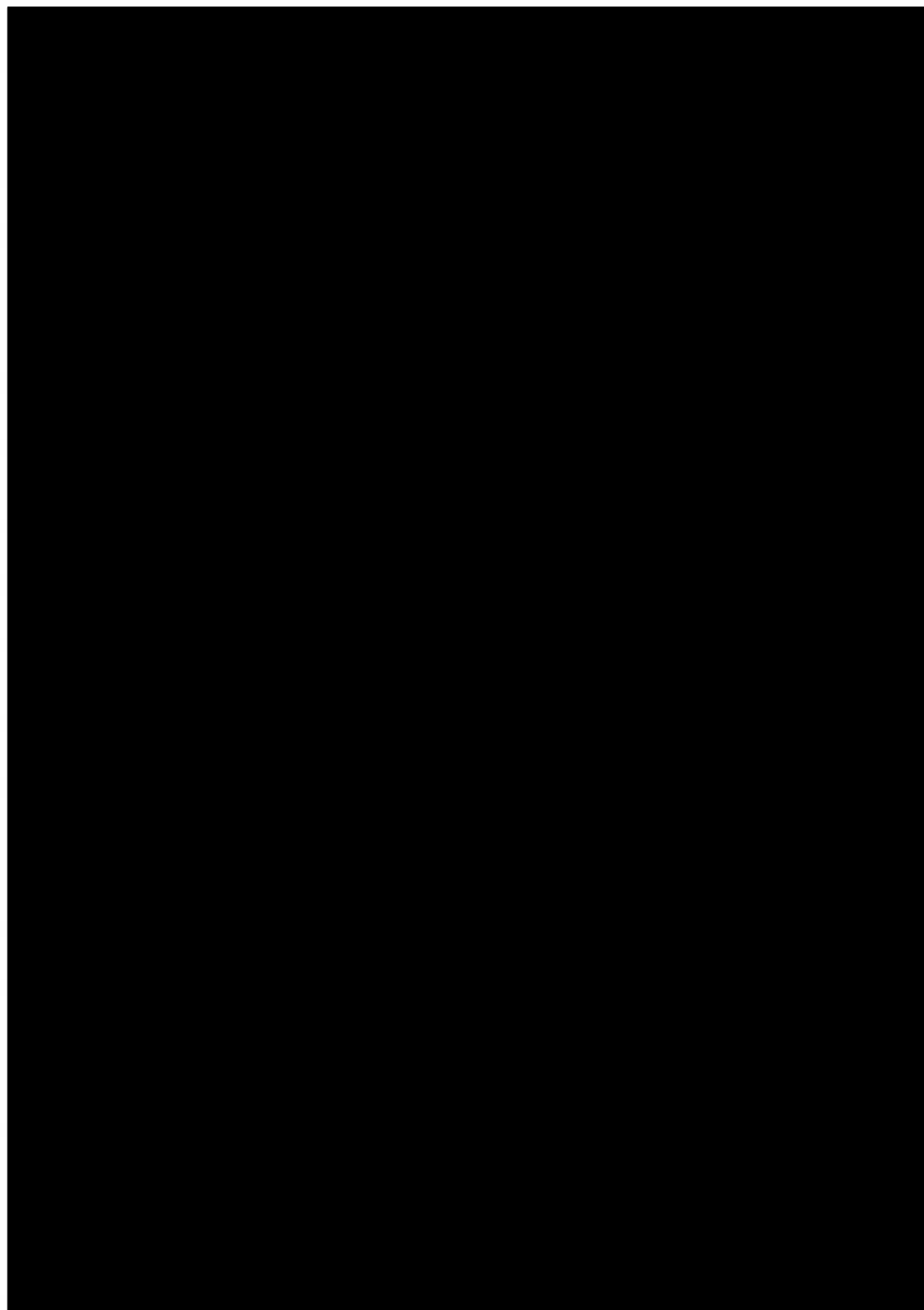
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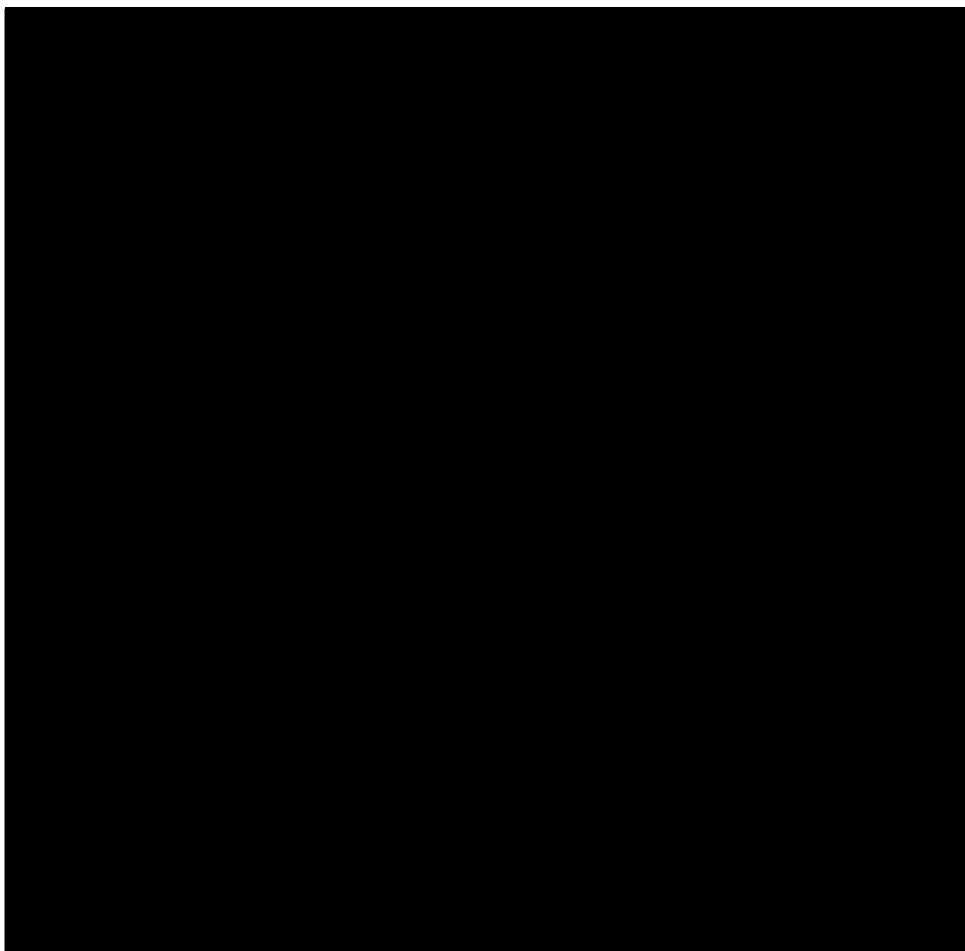
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EXHIBIT 6





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EXHIBIT 7

